

## SEQUENCE LISTING



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TECH CENTER 1600/2900

<110> Scarlato, Vincenzo  
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Rappuoli, Rino  
Pizza, Mariagrazia  
Grandi, Guido

<120> Neisserial Antigens

<130> CHIR0160

<140> 09/303,518

<141> 1999-04-30

<160> 1098

<170> PatentIn version 3.1

<210> 1

<211> 502

<212> DNA

<213> Neisseria meningitidis

<220>

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<222> (66)..(66)

<223> N= Unknown

<220>

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<222> (483)..(483)

<223> N= Unknown

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gctgaagcgg	tcagatggta	tcggcagccg	gcggaacagg	ggttagccca	agcccaatac			240
aatttgggct	ggatgtatgc	caacggg	gcgc	gcgtgcgcca	agatgatacc	gaagcgggtca		300
gatggtatcg	gcaggcggca	gcgcagggg	ttgtccaagc	ccaatacaat	ttgggcgtga			360
tatatgccga	aggacgtgga	gtgcgccaag	acgatgtcga	agcggtcaga	tggtttcggc			420
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<210> 2

<211> 168

<212> PRT

<213> Neisseria meningitidis

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<222> (6)..(6)

<223> Xaa= any amino acid

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 Leu Xaa Ala Ala Ala Gln Gly Asn Ala Ala Ala Gln Tyr Asn Leu Gly  
 35 40 45  
 Ala Met Tyr Xaa Gln Arg Thr Arg Val Arg Arg Asp Asp Ala Glu Ala  
 50 55 60  
 Val Arg Trp Tyr Arg Gln Pro Ala Glu Gln Gly Leu Ala Gln Ala Gln  
 65 70 75 80  
 Tyr Asn Leu Gly Trp Met Tyr Ala Asn Gly Arg Xaa Val Arg Gln Asp  
 85 90 95  
 Asp Thr Glu Ala Val Arg Trp Tyr Arg Gln Ala Ala Ala Gln Gly Val  
 100 105 110  
 Val Gln Ala Gln Tyr Asn Leu Gly Val Ile Tyr Ala Glu Gly Arg Gly  
 115 120 125  
 Val Arg Gln Asp Asp Val Glu Ala Val Arg Trp Phe Arg Gln Ala Ala  
 130 135 140  
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 145 150 155 160  
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 <211> 597  
 <212> DNA  
 <213> *Neisseria meningitidis*

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 gcagcagccc aatacaattt gggcgcaatg tattacaaag gacgcggcgt gcgccgggat 180  
 gatgctgaag cggtcagatg gtatcggcag gcggcggaac aggggttagc ccaagcccaa 240  
 tacaatttgg gctggatgta tgccaacggg cgcggcgtgc gccaatga taccgaagcg 300  
 gtcagatggt atcggcaggg ggcagcgag ggggttgtcc aagcccaata caatttgggc 360  
 gtgatatatg ccgaaggacg tggagtgcgc caagacgatg tcgaagcggg cagatgggtt 420  
 cggcagggcg cagcgcaggg ggtagcccaa gcccaaaaca atttgggcgt gatgtatgcc 480  
 gaaagacgcg gcgtgcgcca agaccgcgc cttgcacaag aatggtttgg caaggcttgt 540  
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 <212> PRT  
 <213> *Neisseria meningitidis*

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 Leu Gln Ala Ala Ala Gln Gly Asn Ala Ala Ala Gln Tyr Asn Leu Gly  
 35 40 45  
 Ala Met Tyr Tyr Lys Gly Arg Gly Val Arg Arg Asp Asp Ala Glu Ala  
 50 55 60  
 Val Arg Trp Tyr Arg Gln Ala Ala Glu Gln Gly Leu Ala Gln Ala Gln  
 65 70 75 80  
 Tyr Asn Leu Gly Trp Met Tyr Ala Asn Gly Arg Gly Val Arg Gln Asp  
 85 90 95  
 Asp Thr Glu Ala Val Arg Trp Tyr Arg Gln Ala Ala Ala Gln Gly Val  
 100 105 110  
 Val Gln Ala Gln Tyr Asn Leu Gly Val Ile Tyr Ala Glu Gly Arg Gly  
 115 120 125  
 Val Arg Gln Asp Asp Val Glu Ala Val Arg Trp Phe Arg Gln Ala Ala  
 130 135 140  
 Ala Gln Gly Val Ala Gln Ala Gln Asn Asn Leu Gly Val Met Tyr Ala  
 145 150 155 160  
 Glu Arg Arg Gly Val Arg Gln Asp Arg Ala Leu Ala Gln Glu Trp Phe

165

170

175

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Arg Leu Lys Ala Gly Tyr  
195

<210> 5  
<211> 273  
<212> DNA  
<213> Neisseria meningitidis

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gcagcagccc aaaacaattt gggcgtgatg tatgccgaaa gacgcggcgt gcgccaagac 180  
cgcgcccttg cacaagaatg gcttggcaag gcttgtcaaa acggatacca agacagctgc 240  
gacaatgacc aacgcctgaa agcgggttat tga 273

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<212> PRT  
<213> Neisseria meningitidis

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Leu Gln Ala Ala Ala Gln Gly Asn Ala Ala Ala Gln Asn Asn Leu Gly  
35 40 45

Val Met Tyr Ala Glu Arg Arg Gly Val Arg Gln Asp Arg Ala Leu Ala  
50 55 60

Gln Glu Trp Leu Gly Lys Ala Cys Gln Asn Gly Tyr Gln Asp Ser Cys  
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Asp Asn Asp Gln Arg Leu Lys Ala Gly Tyr  
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<210> 7  
<211> 381  
<212> DNA  
<213> Neisseria gonorrhoeae

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gcagcagccc aattcaattt gggcgtgatg tatgaaaatg gacaaggagt tcgtcaagat 180  
tatgtacagg cagtgcagtg gtatcgcaag gcttcagaac aaggggatgc ccaagcccaa 240  
tacaatttgg gcttgatgta ttacgatgga cgcggcgtgc gccaagacct tgcgctcgct 300  
caacaatggc ttggcaaggc ttgtcaaaaac ggagacccaa acagctgcga caatgaccaa 360

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381

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<213> Neisseria meningitidis

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Leu Gln Ala Ala Glu Gln Gly Asn Ala Ala Ala Gln Phe Asn Leu Gly  
35 40 45  
Val Met Tyr Glu Asn Gly Gln Gly Val Arg Gln Asp Tyr Val Gln Ala  
50 55 60  
Val Gln Trp Tyr Arg Lys Ala Ser Glu Gln Gly Asp Ala Gln Ala Gln  
65 70 75 80  
Tyr Asn Leu Gly Leu Met Tyr Tyr Asp Gly Arg Gly Val Arg Gln Asp  
85 90 95  
Leu Ala Leu Ala Gln Gln Trp Leu Gly Lys Ala Cys Gln Asn Gly Asp  
100 105 110  
Gln Asn Ser Cys Asp Asn Asp Gln Arg Leu Lys Ala Gly Tyr  
115 120 125

<210> 9  
<211> 357  
<212> DNA  
<213> Neisseria meningitidis

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ttggacggca agtatcagtt cagcagcgac gtttccgcgc aaatcctgac ttcsggactt 180  
ttgggcgagc agtacatcgg gctgcagcag ggcggcgaca cggaaaacct tgctgccggc 240  
gacaccatct ccgtaaccag ttctgcaatg gttctggaaa accttatcgg caaattcatg 300  
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<212> PRT  
<213> Neisseria meningitidis

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Gly Val Leu Val Gly Arg Val Gly Ala Ile Gly Leu Asp Pro Lys Ser  
20 25 30

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 35 40 45  
 Ser Asp Val Ser Ala Gln Ile Leu Thr Ser Gly Leu Leu Gly Glu Gln  
 50 55 60  
 Tyr Ile Gly Leu Gln Gln Gly Gly Asp Thr Glu Asn Leu Ala Ala Gly  
 65 70 75 80  
 Asp Thr Ile Ser Val Thr Ser Ser Ala Met Val Leu Glu Asn Leu Ile  
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 Gly Lys Phe Met Thr Ser Phe Ala Glu Lys Asn Ala Asp Gly Gly Asn  
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 Ala Glu Lys Ala Ala Glu  
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 <211> 858  
 <212> DNA  
 <213> Neisseria meningitidis

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 tattcagacg gcattccgct gcccgacgga gaacgcctga caccgttcgg caaaaaactg 180  
 cgtgccgcca gtwtggacga actgcctgaa ttatggaata tcttaaaagg cgagatgagc 240  
 ctggtcggcc cccgcccgct gctgatgcaa tatctgccgc tgtacgacaa cttccaaaac 300  
 cgccgccacg aaatgaaacc cggcattacc ggctggggcg aggtcaacgg gcgcaacgcg 360  
 ctttcgtggg acgaaaaatt cgcctgcgat gtttggtata tcgaccactt cagcctgtgc 420  
 ctcgacatca aaatcctact gctgacggtt aaaaaagtat taatcaagga agggatttcc 480  
 gcacagggcg aacaaccatg ccccttttca caggaaaacg caaactcgcc gtcgtcgggtg 540  
 cgggaggaca cggaaaagtc gttgccgacc ttgccgccc actcggccgg tacagggaaa 600  
 tcgtttttct ggacgaccgc gcacaaggca gcgtcaacgg cttttccgct atcggcacga 660  
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 acaaccgcat ccgccgcaa atcgccgaaa aagccgccgc gtcgggttc gccctgcccg 780  
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 <213> Neisseria meningitidis

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 <223> Xaa= any amino acid

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 <223> Xaa= any amino acid

<400> 12

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 Phe Arg Ser Met Arg Asp Gly Leu Tyr Ser Asp Gly Ile Pro Leu Pro  
 35 40 45  
 Asp Gly Glu Arg Leu Thr Pro Phe Gly Lys Lys Leu Arg Ala Ala Ser  
 50 55 60  
 Xaa Asp Glu Leu Pro Glu Leu Trp Asn Ile Leu Lys Gly Glu Met Ser  
 65 70 75 80  
 Leu Val Gly Pro Arg Pro Leu Leu Met Gln Tyr Leu Pro Leu Tyr Asp  
 85 90 95  
 Asn Phe Gln Asn Arg Arg His Glu Met Lys Pro Gly Ile Thr Gly Trp  
 100 105 110  
 Ala Gln Val Asn Gly Arg Asn Ala Leu Ser Trp Asp Glu Lys Phe Ala  
 115 120 125  
 Cys Asp Val Trp Tyr Ile Asp His Phe Ser Leu Cys Leu Asp Ile Lys  
 130 135 140  
 Ile Leu Leu Leu Thr Val Lys Lys Val Leu Ile Lys Glu Gly Ile Ser  
 145 150 155 160  
 Ala Gln Gly Glu Xaa Thr Met Pro Pro Phe Thr Gly Lys Arg Lys Leu  
 165 170 175  
 Ala Val Val Gly Ala Gly Gly His Gly Lys Val Val Ala Asp Leu Ala  
 180 185 190  
 Ala Ala Leu Gly Arg Tyr Arg Glu Ile Val Phe Leu Asp Asp Arg Ala  
 195 200 205  
 Gln Gly Ser Val Asn Gly Phe Ser Val Ile Gly Thr Thr Leu Leu Leu  
 210 215 220  
 Glu Asn Ser Leu Ser Pro Glu Gln Tyr Asp Val Ala Val Ala Val Gly  
 225 230 235 240  
 Asn Asn Arg Ile Arg Arg Gln Ile Ala Glu Lys Ala Ala Ala Leu Gly  
 245 250 255  
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 275 280 285

<210> 13

<211> 1242

<212> DNA  
<213> Neisseria meningitidis

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ttcttctttc aggaacgccc cggaaaggac ggaaaacctt ttaaaatggt caaattccgt 180  
tccatgcgcg acgcgcttga ttcagacggc attccgctgc ccgacggaga acgcctgaca 240  
ccgttcggca aaaaactgcg tgccgccagt ttggacgaac tgccctgaatt atggaatata 300  
ttaaaggcg agatgagcct ggtcggcccc cgcccgtgc tgatgcaata tctgccgctg 360  
tacgacaact tccaaaaccg ccgccacgaa atgaaaccg gcattaccgg ctgggcgag 420  
gtcaacgggc gcaacgcgct ttcgtgggac gaaaaattcg cctgcgatgt ttggtatata 480  
gaccacttca gcctgtgcct cgacatcaaa atcctactgc tgacgggttaa aaaagtatta 540  
atcaaggaag ggatttccgc acaggcgcaa gccaccatgc cccctttcac aggaaaacgc 600  
aaactcgccg tcgtcggtag gggcggacac ggaaaagtcg ttgccgacct tgccgcgcga 660  
ctcgcccggt acagggaaat cgtttttctg gacgaccgcg cacaaggcag cgtcaacggc 720  
ttttccgtca tcggcacgac gctgctgctt gaaaacagtt tatcgcccga acaatacgac 780  
gtcgccgctc ccgtcggcaa caaccgcatc cgccgccaaa tcgccgaaaa agccgcgcgcg 840  
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gtcggacaag gcagcgtcgt tatggcgaaa gccgtcgtac aggcaggcag cgtattgaaa 960  
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ataggcacgg gcgcgtgcag ccgccagcag atccgtatcg gcagccgcgc aaccattgga 1140  
gcgggcgcag tcgtcgtacg cgacgtttca gacggcatga ccgtcgcggg caatccggca 1200  
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<212> PRT  
<213> Neisseria meningitidis

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Arg Lys Asn Leu Gly Ser Pro Val Phe Phe Phe Gln Glu Arg Pro Gly  
35 40 45  
Lys Asp Gly Lys Pro Phe Lys Met Val Lys Phe Arg Ser Met Arg Asp  
50 55 60  
Ala Leu Asp Ser Asp Gly Ile Pro Leu Pro Asp Gly Glu Arg Leu Thr  
65 70 75 80  
Pro Phe Gly Lys Lys Leu Arg Ala Ala Ser Leu Asp Glu Leu Pro Glu  
85 90 95  
Leu Trp Asn Ile Leu Lys Gly Glu Met Ser Leu Val Gly Pro Arg Pro  
100 105 110  
Leu Leu Met Gln Tyr Leu Pro Leu Tyr Asp Asn Phe Gln Asn Arg Arg  
115 120 125

His Glu Met Lys Pro Gly Ile Thr Gly Trp Ala Gln Val Asn Gly Arg  
 130 135 140  
 Asn Ala Leu Ser Trp Asp Glu Lys Phe Ala Cys Asp Val Trp Tyr Ile  
 145 150 155 160  
 Asp His Phe Ser Leu Cys Leu Asp Ile Lys Ile Leu Leu Leu Thr Val  
 165 170 175  
 Lys Lys Val Leu Ile Lys Glu Gly Ile Ser Ala Gln Gly Glu Ala Thr  
 180 185 190  
 Met Pro Pro Phe Thr Gly Lys Arg Lys Leu Ala Val Val Gly Ala Gly  
 195 200 205  
 Gly His Gly Lys Val Val Ala Asp Leu Ala Ala Leu Gly Arg Tyr  
 210 215 220  
 Arg Glu Ile Val Phe Leu Asp Asp Arg Ala Gln Gly Ser Val Asn Gly  
 225 230 235 240  
 Phe Ser Val Ile Gly Thr Thr Leu Leu Leu Glu Asn Ser Leu Ser Pro  
 245 250 255  
 Glu Gln Tyr Asp Val Ala Val Ala Val Gly Asn Asn Arg Ile Arg Arg  
 260 265 270  
 Gln Ile Ala Glu Lys Ala Ala Ala Leu Gly Phe Ala Leu Pro Val Leu  
 275 280 285  
 Val His Pro Asp Ala Thr Val Ser Pro Ser Ala Thr Val Gly Gln Gly  
 290 295 300  
 Ser Val Val Met Ala Lys Ala Val Val Gln Ala Gly Ser Val Leu Lys  
 305 310 315 320  
 Asp Gly Val Ile Val Asn Thr Ala Ala Thr Val Asp His Asp Cys Leu  
 325 330 335  
 Leu Asn Ala Phe Val His Ile Ser Pro Gly Ala His Leu Ser Gly Asn  
 340 345 350  
 Thr His Ile Gly Glu Glu Ser Trp Ile Gly Thr Gly Ala Cys Ser Arg  
 355 360 365  
 Gln Gln Ile Arg Ile Gly Ser Arg Ala Thr Ile Gly Ala Gly Ala Val  
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 385 390 395 400  
 Lys Pro Leu Pro Arg Lys Asn Pro Glu Thr Ser Thr Ala  
 405 410

<210> 15  
 <211> 1242

<212> DNA  
<213> Neisseria meningitidis

<400> 15

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ttcttctt tc aggaacgc cc cggaaagg ac ggaaaaac ct ttaaaatg gt caaattccgt 180
tccatgcac g acgcgctt ga ttcagacggc attctgct gc ccgacggaga acgcctgaca 240
ccgttcgg ca aaaaactg cg tgccgccc agt ttggacga ac tgcccgaact gtggaacgtc 300
ctcaaagg cg acatgagc ct ggtcggcccc cgcccgtg ct tgatgcaata tctgccgtg 360
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gtcaacgg gc gcaacgcg ct ttcgtggg ac gaacgctt cg catgcgac at ctggtatata 480
gaccactt ca gcctgtgc ct cgacatcaa atcctaact gc tgacgggt aa aaaagtatta 540
atcaaaga ag ggatttcc gc acagggcg aa gccaccat gc cccctttcac aggaaaaacg 600
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ttccccgt ca tcggcacg ac gctgctgt tt gaaaacag tt tatcgccc ga acaattcgac 780
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ataggcac ag gcgcgtgc ag ccgccagc ag atccgtat cg gcagccgc gc aaccattgga 1140
gcgggcgc ag tcgtcgtg cg cgacgttt ca gacggcat ga ccgtcgcggg caaccgggca 1200
aaaccatt gg caggcaaaaa taccgagacc ctgcggtc gt aa 1242
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<212> PRT  
<213> Neisseria meningitidis

<400> 16

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Arg Lys Asn Leu Gly Ser Pro Val Phe Phe Phe Gln Glu Arg Pro Gly
35 40 45
Lys Asp Gly Lys Pro Phe Lys Met Val Lys Phe Arg Ser Met His Asp
50 55 60
Ala Leu Asp Ser Asp Gly Ile Leu Leu Pro Asp Gly Glu Arg Leu Thr
65 70 75 80
Pro Phe Gly Lys Lys Leu Arg Ala Ala Ser Leu Asp Glu Leu Pro Glu
85 90 95
Leu Trp Asn Val Leu Lys Gly Asp Met Ser Leu Val Gly Pro Arg Pro
100 105 110
Leu Leu Met Gln Tyr Leu Pro Leu Tyr Asp Asn Phe Gln Asn Arg Arg
115 120 125
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His Glu Met Lys Pro Gly Ile Thr Gly Trp Ala Gln Val Asn Gly Arg  
 130 135 140  
 Asn Ala Leu Ser Trp Asp Glu Arg Phe Ala Cys Asp Ile Trp Tyr Ile  
 145 150 155 160  
 Asp His Phe Ser Leu Cys Leu Asp Ile Lys Ile Leu Leu Leu Thr Val  
 165 170 175  
 Lys Lys Val Leu Ile Lys Glu Gly Ile Ser Ala Gln Gly Glu Ala Thr  
 180 185 190  
 Met Pro Pro Phe Thr Gly Lys Arg Lys Leu Ala Val Val Gly Ala Gly  
 195 200 205  
 Gly His Gly Lys Val Val Ala Glu Leu Ala Ala Ala Leu Gly Thr Tyr  
 210 215 220  
 Gly Glu Ile Val Phe Leu Asp Asp Arg Val Gln Gly Ser Val Asn Gly  
 225 230 235 240  
 Phe Pro Val Ile Gly Thr Thr Leu Leu Leu Glu Asn Ser Leu Ser Pro  
 245 250 255  
 Glu Gln Phe Asp Ile Ala Val Ala Val Gly Asn Asn Arg Ile Arg Arg  
 260 265 270  
 Gln Ile Ala Glu Lys Ala Ala Ala Leu Gly Phe Ala Leu Pro Val Leu  
 275 280 285  
 Ile His Pro Asp Ser Thr Val Ser Pro Ser Ala Thr Val Gly Gln Gly  
 290 295 300  
 Gly Val Val Met Ala Lys Ala Val Val Gln Ala Asp Ser Val Leu Lys  
 305 310 315 320  
 Asp Gly Val Ile Val Asn Thr Ala Ala Thr Val Asp His Asp Cys Leu  
 325 330 335  
 Leu Asp Ala Phe Val His Ile Ser Pro Gly Ala His Leu Ser Gly Asn  
 340 345 350  
 Thr Arg Ile Gly Glu Glu Ser Trp Ile Gly Thr Gly Ala Cys Ser Arg  
 355 360 365  
 Gln Gln Ile Arg Ile Gly Ser Arg Ala Thr Ile Gly Ala Gly Ala Val  
 370 375 380  
 Val Val Arg Asp Val Ser Asp Gly Met Thr Val Ala Gly Asn Pro Ala  
 385 390 395 400  
 Lys Pro Leu Ala Gly Lys Asn Thr Glu Thr Leu Arg Ser  
 405 410

<210> 17

<211> 1242

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 17

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tccatgcgcg	acgcgcttga	ttcagacggc	attccgctgc	ccgatagcga	acgcctgacc	240
gatttcggca	aaaaattacg	cgccaccagt	ttggacgaac	ttcctgaatt	atggaatgtc	300
ctcaaaggcg	agatgagcct	ggtcggcccc	cgcccgtttt	tgatgcagta	tctgccgctt	360
tacaacaaat	ttcaaaaccg	ccgccacgaa	atgaaaccgg	gcattaccgg	ctgggcgcag	420
gtcaacgggc	gcaacgcgct	ttcgtgggac	gaaaagttct	cctgcgatgt	ttggtacacc	480
gacaatttca	gcttttggct	ggatatgaaa	atcctgtttc	tgacagtcaa	aaaagtcttg	540
attaaagaag	gcatttcggc	gcaaggggaa	gccaccatgc	cccctttcgc	ggggaatcgc	600
aaactcgcg	ttatcggcgc	gggcggacac	ggcaaagtcg	ttgccgagct	tgccgccgca	660
ctcggcacat	acggcgaaat	cgtttttctg	gacgaccgca	cccaaggcag	cgtcaacggc	720
ttccccgtca	tcggcacgac	gctgctgctt	gaaaacagtt	tatcgcccga	acaattcgac	780
atcaccgtcg	ccgtcggcaa	caaccgcatac	cgccgccaaa	tcaccgaaaa	cgccgccgcg	840
ctcggcttca	aactgcccg	tctgattcat	cccagcgcga	ccgtctcgcc	ttctgcaata	900
atcggacaag	gcagcgtcgt	aatggcgaaa	gccgtcgtac	aggccggcag	cgtattgaaa	960
gacggcgtga	ttgtgaacac	tgccgccacc	gtcgatcacg	actgcctgct	tgacgctttc	1020
gtccacatca	gcccgggcgc	gcacctgtcg	ggcaacacgc	gtatcggcga	agaaagccgg	1080
ataggcacgg	gcgcgtgcag	ccgccagcag	acaaccgtcg	gcagcggggg	taccgccggg	1140
gcaggggcgg	ttatcgatatg	cgacatcccg	gacggcatga	ccgtcgcggg	caaccgggca	1200
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<210> 18

<211> 413

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 18

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Gly	Leu	Ile	Val	Leu	Ser	Pro	Val	Phe	Leu	Val	Leu	Ile	Tyr	Leu	Ile
			20					25					30		
Arg	Lys	Asn	Leu	Gly	Ser	Pro	Val	Phe	Phe	Ile	Arg	Glu	Arg	Pro	Gly
		35					40					45			
Lys	Asp	Gly	Lys	Pro	Phe	Lys	Met	Val	Lys	Phe	Arg	Ser	Met	Arg	Asp
	50					55					60				
Ala	Leu	Asp	Ser	Asp	Gly	Ile	Pro	Leu	Pro	Asp	Ser	Glu	Arg	Leu	Thr
65					70					75				80	
Asp	Phe	Gly	Lys	Lys	Leu	Arg	Ala	Thr	Ser	Leu	Asp	Glu	Leu	Pro	Glu
				85					90					95	
Leu	Trp	Asn	Val	Leu	Lys	Gly	Glu	Met	Ser	Leu	Val	Gly	Pro	Arg	Pro
		100						105					110		
Leu	Leu	Met	Gln	Tyr	Leu	Pro	Leu	Tyr	Asn	Lys	Phe	Gln	Asn	Arg	Arg
		115						120					125		

His Glu Met Lys Pro Gly Ile Thr Gly Trp Ala Gln Val Asn Gly Arg  
 130 135 140  
 Asn Ala Leu Ser Trp Asp Glu Lys Phe Ser Cys Asp Val Trp Tyr Thr  
 145 150 155 160  
 Asp Asn Phe Ser Phe Trp Leu Asp Met Lys Ile Leu Phe Leu Thr Val  
 165 170 175  
 Lys Lys Val Leu Ile Lys Glu Gly Ile Ser Ala Gln Gly Glu Ala Thr  
 180 185 190  
 Met Pro Pro Phe Ala Gly Asn Arg Lys Leu Ala Val Ile Gly Ala Gly  
 195 200 205  
 Gly His Gly Lys Val Val Ala Glu Leu Ala Ala Ala Leu Gly Thr Tyr  
 210 215 220  
 Gly Glu Ile Val Phe Leu Asp Asp Arg Thr Gln Gly Ser Val Asn Gly  
 225 230 235 240  
 Phe Pro Val Ile Gly Thr Thr Leu Leu Leu Glu Asn Ser Leu Ser Pro  
 245 250 255  
 Glu Gln Phe Asp Ile Thr Val Ala Val Gly Asn Asn Arg Ile Arg Arg  
 260 265 270  
 Gln Ile Thr Glu Asn Ala Ala Ala Leu Gly Phe Lys Leu Pro Val Leu  
 275 280 285  
 Ile His Pro Asp Ala Thr Val Ser Pro Ser Ala Ile Ile Gly Gln Gly  
 290 295 300  
 Ser Val Val Met Ala Lys Ala Val Val Gln Ala Gly Ser Val Leu Lys  
 305 310 315 320  
 Asp Gly Val Ile Val Asn Thr Ala Ala Thr Val Asp His Asp Cys Leu  
 325 330 335  
 Leu Asp Ala Phe Val His Ile Ser Pro Gly Ala His Leu Ser Gly Asn  
 340 345 350  
 Thr Arg Ile Gly Glu Glu Ser Arg Ile Gly Thr Gly Ala Cys Ser Arg  
 355 360 365  
 Gln Gln Thr Thr Val Gly Ser Gly Val Thr Ala Gly Ala Gly Ala Val  
 370 375 380  
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 385 390 395 400  
 Lys Pro Leu Thr Gly Lys Asn Pro Lys Thr Gly Thr Ala  
 405 410

<210> 19  
 <211> 394

<212> DNA

<213> *Neisseria meningitidis*

<400> 19

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gacaatatcc	atgccgtttc	ttcagacacg	tggcgcaccc	atgcagctac	cgaaatcgaa	180
gacatcaaca	ccttcttcgg	cacggaatac	agcatcgaag	aagccgacac	cattggcggc	240
ctggtcattc	aagagttggg	acatctgccc	gtgcgcggcg	aaaaagtcct	tatcggcggt	300
ttgcagttca	ccgtcgacg	cgccgacaac	cgccgcctgc	atacgtgat	ggcgacccgc	360
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<210> 20

<211> 131

<212> PRT

<213> *Neisseria meningitidis*

<220>

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<222> (125)..(125)

<223> Xaa= any amino acid

<400> 20

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			20				25						30			
Glu	Phe	Asp	Glu	Asp	Asp	Ser	Ala	Asp	Asn	Ile	His	Ala	Val	Ser	Ser	
		35					40					45				
Asp	Thr	Trp	Arg	Ile	His	Ala	Ala	Thr	Glu	Ile	Glu	Asp	Ile	Asn	Thr	
	50				55						60					
Phe	Phe	Gly	Thr	Glu	Tyr	Ser	Ile	Glu	Glu	Ala	Asp	Thr	Ile	Xaa	Arg	
65				70					75						80	
Pro	Gly	His	Ser	Arg	Val	Gly	Thr	Ser	Ala	Arg	Ala	Arg	Arg	Lys	Ser	
			85						90					95		
Pro	Tyr	Arg	Arg	Phe	Ala	Val	His	Arg	Arg	Thr	Arg	Arg	Gln	Pro	Pro	
		100						105					110			
Pro	Ala	Tyr	Ala	Asp	Gly	Asp	Pro	Arg	Glu	Val	Ser	Xaa	Arg	Arg	Phe	
		115					120					125				
Cys	Thr	Val														
	130															

<210> 21

<211> 900  
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 <213> *Neisseria meningitidis*

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 tttgatgcgg atacgctttt aagattggaa aaagtccctc atttttccga tttggaagtg 180  
 cgcgacgcga tgattacgcg cagccgtatg aacgttttaa aagaaaacga cagcatcgag 240  
 cgcacacccg cctacgttat cgataccgcc ctttcgcgct tccccgtcat cggcgaagac 300  
 aaagacgaag ttttgggcat tttgcacgcc aaagacctgc tcaaataatat gtttaacccc 360  
 gagcagttcc acctcaaate cattctccgc ccgcgcgtct tcgtccccga aggcgaatcg 420  
 ctgaccgccc ttttaaaaga gttccgcgaa cagcgcaacc atatggcgat tgtcatcgac 480  
 gaatacggcg gcacatccgg cttgggtcacc tttgaagaca tcatcgagca aatcgctcggc 540  
 gaaatcgaag acgagtttga cgaagacgat agcgcgcgaca atatccatgc cgtttcttcc 600  
 gaacgctggc gcatccatgc agtaccgaa atcgaagaca tcaacacctt cttcggcacg 660  
 gaatacagca gcgaagaagc cgacaccatt cggcctgggc attcaagagt tgggacatct 720  
 gccgctgcgc ggcgaaaaag tccttatcgg cggtttgagc ttcaccgtcg cacgcgccga 780  
 caaccgccgc ctgcatacgc tgatggcgac ccgcgtgaag taagcaccgc cgtttctgca 840  
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<210> 22  
 <211> 299  
 <212> PRT  
 <213> *Neisseria meningitidis*

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 20 25 30  
 Arg Gln Ala His Glu Gln Glu Val Phe Asp Ala Asp Thr Leu Leu Arg  
 35 40 45  
 Leu Glu Lys Val Leu Asp Phe Ser Asp Leu Glu Val Arg Asp Ala Met  
 50 55 60  
 Ile Thr Arg Ser Arg Met Asn Val Leu Lys Glu Asn Asp Ser Ile Glu  
 65 70 75 80  
 Arg Ile Thr Ala Tyr Val Ile Asp Thr Ala His Ser Arg Phe Pro Val  
 85 90 95  
 Ile Gly Glu Asp Lys Asp Glu Val Leu Gly Ile Leu His Ala Lys Asp  
 100 105 110  
 Leu Leu Lys Tyr Met Phe Asn Pro Glu Gln Phe His Leu Lys Ser Ile  
 115 120 125  
 Leu Arg Pro Ala Val Phe Val Pro Glu Gly Lys Ser Leu Thr Ala Leu  
 130 135 140  
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tttgatgcgg atacgctttt aagattggaa aaagtcctcg atttttctga tttggaagtg 180  
cgcgacgcga tgattacgcg cagccgtatg aacgttttaa aagaaaacga cagcatcgaa 240  
cgcatcaccg cctacgttat cgataccgcc cattcgcgct tccccgtcat cgggtgaagac 300  
aaagacgaag ttttgggtat tttgcacgcc aaagacctgc tcaaataat gttcaacccc 360  
gagcagttcc acctcaaadc gatattgcgc cctgccgtct tcgtccccga aggcaaatac 420  
ctgaccgccc ttttaaaaga gttccgcgaa cagcgcaacc atatggcaat cgtcatcgac 480  
gaatacggcg gcacgtcggg tttggttaact tttgaagaca tcatcgagca aatcgtcggc 540  
gacatcgaag atgagtttga cgaagacgaa agcgcggaca acatccacgc cgtttccgcc 600  
gaacgctggc gcatccacgc ggctaccgaa atcgaagaca tcaacgcctt tttcggcacg 660  
gaatacagca gcgaagaagc cgacaccatc ggcgccntg gtcattcagg aattggnaca 720  
cctgcccgtg cgcggcgaaa aagtcnttat cggcgntttg canttcaacng tcgcengcgc 780  
ngacaaccgc cgctgcata cgctgatggc gaccgcgctg aagtaagctc cgccgtttct 840  
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taa 903

<210> 24  
<211> 300  
<212> PRT  
<213> Neisseria meningitidis

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<223> Xaa= any amino acid

<220>  
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<223> Xaa= any amino acid

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<222> (249)..(249)

<223> Xaa= any amino acid

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<223> Xaa= any amino acid

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<222> (299)..(299)

<223> Xaa= any amino acid

<400> 24

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		20						25					30		

Arg	Gln	Ala	His	Glu	Gln	Glu	Val	Phe	Asp	Ala	Asp	Thr	Leu	Leu	Arg
		35					40					45			

Leu	Glu	Lys	Val	Leu	Asp	Phe	Ser	Asp	Leu	Glu	Val	Arg	Asp	Ala	Met
	50					55					60				

Ile	Thr	Arg	Ser	Arg	Met	Asn	Val	Leu	Lys	Glu	Asn	Asp	Ser	Ile	Glu
65					70					75				80	

Arg	Ile	Thr	Ala	Tyr	Val	Ile	Asp	Thr	Ala	His	Ser	Arg	Phe	Pro	Val
			85						90					95	



Ile Gly Glu Asp Lys Asp Glu Val Leu Gly Ile Leu His Ala Lys Asp  
 100 105 110  
 Leu Leu Lys Tyr Met Phe Asn Pro Glu Gln Phe His Leu Lys Ser Ile  
 115 120 125  
 Leu Arg Pro Ala Val Phe Val Pro Glu Gly Lys Ser Leu Thr Ala Leu  
 130 135 140  
 Leu Lys Glu Phe Arg Glu Gln Arg Asn His Met Ala Ile Val Ile Asp  
 145 150 155 160  
 Glu Tyr Gly Gly Thr Ser Gly Leu Val Thr Phe Glu Asp Ile Ile Glu  
 165 170 175  
 Gln Ile Val Gly Asp Ile Glu Asp Glu Phe Asp Glu Asp Glu Ser Ala  
 180 185 190  
 Asp Asn Ile His Ala Val Ser Ala Glu Arg Trp Arg Ile His Ala Ala  
 195 200 205  
 Thr Glu Ile Glu Asp Ile Asn Ala Phe Phe Gly Thr Glu Tyr Ser Ser  
 210 215 220  
 Glu Glu Ala Asp Thr Ile Gly Gly Xaa Gly His Ser Gly Ile Gly Thr  
 225 230 235 240  
 Pro Ala Arg Ala Arg Arg Lys Ser Xaa Tyr Arg Arg Xaa Ala Xaa His  
 245 250 255  
 Xaa Arg Xaa Arg Xaa Gln Pro Pro Pro Ala Tyr Ala Asp Gly Asp Pro  
 260 265 270  
 Arg Glu Val Ser Ser Ala Val Ser Val Gln Phe Arg Met Thr Val Arg  
 275 280 285  
 Ala Phe Ser Val Ser Ile Arg Pro Ile Arg Xaa Thr  
 290 295 300

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 <213> *Neisseria gonorrhoeae*

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 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 26

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Arg Gln Ala His Glu Gln Glu Val Phe Asp Ala Asp Thr Leu Thr Arg  
35 40 45  
Leu Glu Lys Val Leu Asp Phe Ala Glu Leu Glu Val Arg Asp Ala Met  
50 55 60  
Ile Thr Arg Ser Arg Met Asn Val Leu Lys Glu Asn Asp Ser Ile Glu  
65 70 75 80  
Arg Ile Thr Ala Tyr Val Ile Asp Thr Ala His Ser Arg Phe Pro Val  
85 90 95  
Ile Gly Glu Asp Lys Asp Glu Val Leu Gly Ile Leu His Ala Lys Asp  
100 105 110  
Leu Leu Lys Tyr Met Phe Asn Pro Glu Gln Phe His Leu Lys Ser Val  
115 120 125  
Leu Arg Pro Ala Val Phe Val Pro Glu Gly Lys Ser Leu Thr Ala Leu  
130 135 140  
Leu Lys Glu Phe Arg Glu Gln Arg Asn His Met Ala Ile Val Ile Asp  
145 150 155 160  
Glu Tyr Gly Gly Thr Ser Gly Leu Val Thr Phe Glu Asp Ile Ile Glu  
165 170 175  
Gln Ile Val Gly Asp Ile Glu Asp Glu Phe Asp Glu Asp Glu Ser Ala  
180 185 190  
Asp Asp Ile His Ser Val Ser Ala Glu Arg Trp Arg Ile His Ala Ala  
195 200 205  
Thr Glu Ile Glu Asp Ile Asn Ala Phe Phe Gly Thr Glu Tyr Gly Ser  
210 215 220  
Glu Glu Ala Asp Thr Ile Arg Arg Leu Gly His Ser Gly Ile Gly Thr  
225 230 235 240  
Pro Ala Arg Ala Arg Arg Lys Ser Pro Tyr Arg Arg Phe Ala Val His  
245 250 255  
Arg Arg Pro Arg Arg Gln Pro Pro Pro Ala His Ala Asp Gly Asp Pro  
260 265 270  
Arg Glu Val Ser Arg Ala Cys Pro His Arg Arg Phe Cys Thr Val  
275 280 285

<210> 27

<211> 915  
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 <213> Neisseria gonorrhoeae

<400> 27

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tttgatgccg	acacactgac	ccggctggaa	aaagtattgg	actttgccga	gctggaagtg	180
cgcgatgcga	tgattacgcg	cagccgcatg	aacgtattga	aagaaaacga	cagcatcgaa	240
cgcacaccg	cctacgtcat	cgataccgcc	cattcgcgct	tccccgtcat	cggcgaagac	300
aaagacgaag	ttttgggcat	tttgcacgcc	aaagacctgc	tcaaataat	gttcaacccc	360
gagcagttcc	acctgaaatc	cgtcttgccg	cctgcccgtt	tcgtgcccga	aggcaaactc	420
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gaatacggcg	gcacgtcggg	tttggtcacc	tttgaagaca	tcacgagca	aatcgtcggt	540
gacatcgaag	acgagtttga	cgaagacgaa	agcgccgacg	acatccactc	cgtttccgcc	600
gaacgctggc	gcatccacgc	ggctaccgaa	atcgaagaca	tcaacgcctt	tttcggtacg	660
gaatacggca	gcgaagaagc	cgacaccatc	cggcggcttg	gtcattcagg	aattgggaca	720
cctgcccgtg	cgcggcgaaa	aagtccttat	cggcgggttg	cagttcaccg	tcgcccgcgc	780
cgacaaccgc	cgccctgcaca	cgtgatggc	gacccgcgtg	aagtaagcag	agcctgccc	840
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<210> 28  
 <211> 304  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 28

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		20						25					30			
Arg	Gln	Ala	His	Glu	Gln	Glu	Val	Phe	Asp	Ala	Asp	Thr	Leu	Thr	Arg	
		35					40					45				
Leu	Glu	Lys	Val	Leu	Asp	Phe	Ala	Glu	Leu	Glu	Val	Arg	Asp	Ala	Met	
	50					55					60					
Ile	Thr	Arg	Ser	Arg	Met	Asn	Val	Leu	Lys	Glu	Asn	Asp	Ser	Ile	Glu	
65					70					75					80	
Arg	Ile	Thr	Ala	Tyr	Val	Ile	Asp	Thr	Ala	His	Ser	Arg	Phe	Pro	Val	
			85						90					95		
Ile	Gly	Glu	Asp	Lys	Asp	Glu	Val	Leu	Gly	Ile	Leu	His	Ala	Lys	Asp	
		100						105						110		
Leu	Leu	Lys	Tyr	Met	Phe	Asn	Pro	Glu	Gln	Phe	His	Leu	Lys	Ser	Val	
		115						120					125			
Leu	Arg	Pro	Ala	Val	Phe	Val	Pro	Glu	Gly	Lys	Ser	Leu	Thr	Ala	Leu	
	130					135						140				
Leu	Lys	Glu	Phe	Arg	Glu	Gln	Arg	Asn	His	Met	Ala	Ile	Val	Ile	Asp	

145		150		155		160
Glu Tyr Gly Gly Thr Ser Gly Leu Val Thr Phe Glu Asp Ile Ile Glu						
	165			170		175
Gln Ile Val Gly Asp Ile Glu Asp Glu Phe Asp Glu Asp Glu Ser Ala						
	180		185			190
Asp Asp Ile His Ser Val Ser Ala Glu Arg Trp Arg Ile His Ala Ala						
	195		200		205	
Thr Glu Ile Glu Asp Ile Asn Ala Phe Phe Gly Thr Glu Tyr Gly Ser						
	210		215		220	
Glu Glu Ala Asp Thr Ile Arg Arg Leu Gly His Ser Gly Ile Gly Thr						
	225		230		235	240
Pro Ala Arg Ala Arg Arg Lys Ser Pro Tyr Arg Arg Phe Ala Val His						
		245		250		255
Arg Arg Pro Arg Arg Gln Pro Pro Pro Ala His Ala Asp Gly Asp Pro						
	260		265		270	
Arg Glu Val Ser Arg Ala Cys Pro Thr Ala Val Ser Ala Gln Phe Arg						
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Met Thr Val Arg Ser Phe Ser Val Ser Ile Arg Pro Ile Arg Gln Thr						
	290		295		300	

<210> 29  
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 <213> Neisseria meningitidis

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aatgaaaaac tgatggcgga agttgcgccc gatgccttca gcggcaatcc tgaagggcag	180
tttttccccg acagctacga aatcgatgcg ggcggcagtg atttcagat ttaccaaacc	240
gcctacaagg gcgatgcaac gccgcctgaa tgagggcatg ggaaagcagg caggacgggc	300
tgccttataa aaacccttat gaaatgctga ttatggcgar cctggtcgaa aaggaaacag	360
ggcatgaagc cgascscgac catgtcgctt ccgtcttcgt caaccgcctg aaaatcggtg	420
tgcgcctgca aaccgasscg tccgtgattt acggcatggg tgcggcatac aagggcaaaa	480
tccgtaaagc cgacctgcgc cgcgacacgc cgtacaacac ctacacgcgc ggcggtctgc	540
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<210> 30  
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 <213> Neisseria meningitidis

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 <223> Xaa= any amin acid

<220>  
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 <223> Xaa= any amin acid

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 Gly His Asp Thr Lys Gly Trp Ser Asn Glu Lys Leu Met Ala Glu Val  
 35 40 45  
 Ala Pro Asp Ala Phe Ser Gly Asn Pro Glu Gly Gln Phe Phe Pro Asp  
 50 55 60  
 Ser Tyr Glu Ile Asp Ala Gly Gly Ser Asp Leu Gln Ile Tyr Gln Thr  
 65 70 75 80  
 Ala Tyr Lys Ala Met Gln Arg Arg Leu Asn Glu Ala Trp Glu Ser Arg  
 85 90 95  
 Gln Asp Gly Leu Pro Tyr Lys Asn Pro Tyr Glu Met Leu Ile Met Ala  
 100 105 110  
 Xaa Leu Val Glu Lys Glu Thr Gly His Glu Ala Xaa Xaa Asp His Val  
 115 120 125  
 Ala Ser Val Phe Val Asn Arg Leu Lys Ile Gly Met Arg Leu Gln Thr  
 130 135 140  
 Xaa Xaa Ser Val Ile Tyr Gly Met Gly Ala Ala Tyr Lys Gly Lys Ile  
 145 150 155 160  
 Arg Lys Ala Asp Leu Arg Arg Asp Thr Pro Tyr Asn Thr Tyr Thr Arg  
 165 170 175  
 Gly Gly Leu Pro Pro Thr Pro Ile Ala Leu Pro  
 180 185

<210> 31  
 <211> 996  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 31  
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 gccgcgctgc tttttgttcc taaggataac ggcagggcat accgaatcaa aattgcctaa 120  
 aaccagggtta tttcgtcggt cggcaggaaa cttgccgaag accgcatcgt gttcagcagg 180

catgttttga	cggcggcggc	ctacgttttg	ggtgtgcaca	acaggctgca	tacggggagc	240
tacagattgc	cttcggaagt	gtctgcttgg	gatattctgc	agaaaatgcg	cggcggcagg	300
ccggattccg	ttaccgtgca	gattatcgaa	ggttcgcgtt	tttcgcatat	gaggaaagtc	360
atcgacgcaa	cggccgacat	cggacacgac	accaaaggct	ggagcaatga	aaaactgatg	420
gcggaagtgt	cggccgatgc	cttcagcggc	aatcctgaag	ggcagttttt	ccccgacagc	480
tacgaaatcg	atgcggggcg	cagtgttttg	cagatttacc	aaaccgccta	caaggcgatg	540
caacgccgcc	tgaatgaggc	atgggaaagc	aggcaggacg	ggctgcctta	taaaaaccct	600
tatgaaatgc	tgattatggc	gagcctggtc	gaaaaggaaa	cagggcatga	agccgaccgc	660
gaccatgtcg	cttcctgtctt	cgtcaaccgc	ctgaaaatcg	gtatgcgcct	gcaaaccgac	720
ccgtccgtga	tttacggcat	gggtgcggca	tacaagggca	aaatccgtaa	agccgacctg	780
cgcgcgcgaca	cgcgcgtacaa	cacctacacg	cgcggcggtc	tgccgccaac	cccgattgcg	840
ctgcccggca	aggcggcact	cgatgccgcc	gccccatccgt	ccggcgaaaa	atacctgtat	900
ttcgtgtcca	aaatggacgg	cacgggcttg	agccagttca	gccatgattt	gaccgaacac	960
aatgccgccg	tccgcaaata	tattttgaaa	aaataa			996

<210> 32

<211> 331

<212> PRT

<213> Neisseria meningitidis

<400> 32

Met	Leu	Arg	Lys	Leu	Leu	Lys	Trp	Ser	Ala	Val	Phe	Leu	Thr	Val	Ser	1	5	10	15
Ala	Ala	Val	Phe	Ala	Ala	Leu	Leu	Phe	Val	Pro	Lys	Asp	Asn	Gly	Arg	20	25	30	
Ala	Tyr	Arg	Ile	Lys	Ile	Ala	Lys	Asn	Gln	Gly	Ile	Ser	Ser	Val	Gly	35	40	45	
Arg	Lys	Leu	Ala	Glu	Asp	Arg	Ile	Val	Phe	Ser	Arg	His	Val	Leu	Thr	50	55	60	
Ala	Ala	Ala	Tyr	Val	Leu	Gly	Val	His	Asn	Arg	Leu	His	Thr	Gly	Thr	65	70	75	80
Tyr	Arg	Leu	Pro	Ser	Glu	Val	Ser	Ala	Trp	Asp	Ile	Leu	Gln	Lys	Met	85	90	95	
Arg	Gly	Gly	Arg	Pro	Asp	Ser	Val	Thr	Val	Gln	Ile	Ile	Glu	Gly	Ser	100	105	110	
Arg	Phe	Ser	His	Met	Arg	Lys	Val	Ile	Asp	Ala	Thr	Pro	Asp	Ile	Gly	115	120	125	
His	Asp	Thr	Lys	Gly	Trp	Ser	Asn	Glu	Lys	Leu	Met	Ala	Glu	Val	Ala	130	135	140	
Pro	Asp	Ala	Phe	Ser	Gly	Asn	Pro	Glu	Gly	Gln	Phe	Phe	Pro	Asp	Ser	145	150	155	160
Tyr	Glu	Ile	Asp	Ala	Gly	Gly	Ser	Asp	Leu	Gln	Ile	Tyr	Gln	Thr	Ala	165	170	175	
Tyr	Lys	Ala	Met	Gln	Arg	Arg	Leu	Asn	Glu	Ala	Trp	Glu	Ser	Arg	Gln	180	185	190	

Asp Gly Leu Pro Tyr Lys Asn Pro Tyr Glu Met Leu Ile Met Ala Ser  
 195 200 205  
 Leu Val Glu Lys Glu Thr Gly His Glu Ala Asp Arg Asp His Val Ala  
 210 215 220  
 Ser Val Phe Val Asn Arg Leu Lys Ile Gly Met Arg Leu Gln Thr Asp  
 225 230 235 240  
 Pro Ser Val Ile Tyr Gly Met Gly Ala Ala Tyr Lys Gly Lys Ile Arg  
 245 250 255  
 Lys Ala Asp Leu Arg Arg Asp Thr Pro Tyr Asn Thr Tyr Thr Arg Gly  
 260 265 270  
 Gly Leu Pro Pro Thr Pro Ile Ala Leu Pro Gly Lys Ala Ala Leu Asp  
 275 280 285  
 Ala Ala Ala His Pro Ser Gly Glu Lys Tyr Leu Tyr Phe Val Ser Lys  
 290 295 300  
 Met Asp Gly Thr Gly Leu Ser Gln Phe Ser His Asp Leu Thr Glu His  
 305 310 315 320  
 Asn Ala Ala Val Arg Lys Tyr Ile Leu Lys Lys  
 325 330

<210> 33  
 <211> 996  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 33  
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 aaccagggtta tttcgtcggc cggcaggaaa cttgccgaag accgcacgtg gttcagcagg 180  
 catgttttga cggcggcggc ctacgttttg ggtgtgcaca acaggctgca tacggggacg 240  
 tacagactgc cttcgggaagt gtctgcttgg gatattctgc agaaaatgcg cggcggcagg 300  
 ccggattccg ttaccgtgca gattatcgaa ggttcgcgtt tttcgcataat gaggaaagtc 360  
 atcgacgcaa cggccgacat cgaacacgac accaaaggct ggagcaatga aaaactgatg 420  
 gcggaagtgt cccctgatgc cttcagcggc aatcctgaag ggcagttttt ccccgacagc 480  
 tacgaaatcg atgcgggcgg cagcgattta cggatttacc aaatcgccta caaggcgatg 540  
 caacgccgac tgaatgaggc atgggaaagc aggcaggacg ggctgcctta taaaaaccct 600  
 tatgaaatgc tgattatggc gagcctgatc gaaaaggaaa cagggcatag agccgaccgc 660  
 gaccatgtcg cttccgtctt cgtcaaccgc ctgaaaatcg gtatgcgcct gcaaaccgac 720  
 ccgtccgtga tttacggcat ggggtgcggca tacaagggca aaatccgtaa agccgacctg 780  
 cgccgcgaca cgccgtacaa cacctacacg cgccggcggc tgccgccaac cccgatcgcg 840  
 ctgcccggca aggcggcact cgatgccgcc gcccatccgt ccggtgaaaa atacctgtat 900  
 ttcgtgtcca aaatggacgg tacgggcttg agccagttca gccatgattt gaccgaacac 960  
 aacgccgcgg ttcgcaaata tattttgaaa aaataa 996

<210> 34  
 <211> 331  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 34

Met	Leu	Arg	Lys	Leu	Leu	Lys	Trp	Ser	Ala	Val	Phe	Leu	Thr	Val	Ser
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Ala	Ala	Val	Phe	Ala	Ala	Leu	Leu	Phe	Val	Pro	Lys	Asp	Asn	Gly	Arg
			20					25					30		
Ala	Tyr	Arg	Ile	Lys	Ile	Ala	Lys	Asn	Gln	Gly	Ile	Ser	Ser	Val	Gly
		35					40					45			
Arg	Lys	Leu	Ala	Glu	Asp	Arg	Ile	Val	Phe	Ser	Arg	His	Val	Leu	Thr
	50					55					60				
Ala	Ala	Ala	Tyr	Val	Leu	Gly	Val	His	Asn	Arg	Leu	His	Thr	Gly	Thr
65					70					75					80
Tyr	Arg	Leu	Pro	Ser	Glu	Val	Ser	Ala	Trp	Asp	Ile	Leu	Gln	Lys	Met
				85					90					95	
Arg	Gly	Gly	Arg	Pro	Asp	Ser	Val	Thr	Val	Gln	Ile	Ile	Glu	Gly	Ser
			100					105					110		
Arg	Phe	Ser	His	Met	Arg	Lys	Val	Ile	Asp	Ala	Thr	Pro	Asp	Ile	Glu
		115					120					125			
His	Asp	Thr	Lys	Gly	Trp	Ser	Asn	Glu	Lys	Leu	Met	Ala	Glu	Val	Ala
	130					135					140				
Pro	Asp	Ala	Phe	Ser	Gly	Asn	Pro	Glu	Gly	Gln	Phe	Phe	Pro	Asp	Ser
145					150					155					160
Tyr	Glu	Ile	Asp	Ala	Gly	Gly	Ser	Asp	Leu	Arg	Ile	Tyr	Gln	Ile	Ala
			165						170					175	
Tyr	Lys	Ala	Met	Gln	Arg	Arg	Leu	Asn	Glu	Ala	Trp	Glu	Ser	Arg	Gln
		180						185					190		
Asp	Gly	Leu	Pro	Tyr	Lys	Asn	Pro	Tyr	Glu	Met	Leu	Ile	Met	Ala	Ser
	195						200					205			
Leu	Ile	Glu	Lys	Glu	Thr	Gly	His	Glu	Ala	Asp	Arg	Asp	His	Val	Ala
	210					215					220				
Ser	Val	Phe	Val	Asn	Arg	Leu	Lys	Ile	Gly	Met	Arg	Leu	Gln	Thr	Asp
225					230					235					240
Pro	Ser	Val	Ile	Tyr	Gly	Met	Gly	Ala	Ala	Tyr	Lys	Gly	Lys	Ile	Arg
			245						250					255	
Lys	Ala	Asp	Leu	Arg	Arg	Asp	Thr	Pro	Tyr	Asn	Thr	Tyr	Thr	Arg	Gly
		260						265					270		
Gly	Leu	Pro	Pro	Thr	Pro	Ile	Ala	Leu	Pro	Gly	Lys	Ala	Ala	Leu	Asp
		275					280					285			
Ala	Ala	Ala	His	Pro	Ser	Gly	Glu	Lys	Tyr	Leu	Tyr	Phe	Val	Ser	Lys



290

295

300

Met Asp Gly Thr Gly Leu Ser Gln Phe Ser His Asp Leu Thr Glu His  
 305 310 315 320

Asn Ala Ala Val Arg Lys Tyr Ile Leu Lys Lys  
 325 330

&lt;210&gt; 35

&lt;211&gt; 8

&lt;212&gt; DNA

&lt;213&gt; Neisseria gonorrhoeae

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (1)..(8)

&lt;223&gt; N= Unknown

&lt;400&gt; 35

nnnnnnnn

8

&lt;210&gt; 36

&lt;211&gt; 236

&lt;212&gt; PRT

&lt;213&gt; Neisseria gonorrhoeae

&lt;400&gt; 36

Met Arg Gly Gly Arg Pro Asp Ser Val Thr Val Gln Ile Ile Glu Gly  
 1 5 10 15

Ser Arg Phe Ser His Met Arg Lys Val Ile Asp Ala Thr Pro Asp Ile  
 20 25 30

Gly His Asp Thr Lys Gly Trp Ser Asn Glu Lys Leu Met Ala Glu Val  
 35 40 45

Ala Pro Asp Ala Phe Ser Gly Asn Pro Glu Gly Gln Phe Phe Pro Asp  
 50 55 60

Ser Tyr Glu Ile Asp Ala Gly Gly Ser Asp Leu Gln Ile Tyr Gln Thr  
 65 70 75 80

Ala Tyr Lys Ala Met Gln Arg Arg Leu Asn Glu Ala Trp Ala Gly Arg  
 85 90 95

Gln Asp Gly Leu Pro Tyr Lys Asn Pro Tyr Glu Met Leu Ile Met Ala  
 100 105 110

Ser Leu Ile Glu Lys Glu Thr Gly His Glu Ala Asp Arg Asp His Val  
 115 120 125

Ala Ser Val Phe Val Asn Arg Leu Lys Ile Gly Met Arg Leu Gln Thr  
 130 135 140

Asp Pro Ser Val Ile Tyr Gly Met Gly Ala Ala Tyr Lys Gly Lys Ile  
 145 150 155 160

Arg Lys Ala Asp Leu Arg Arg Asp Thr Pro Tyr Asn Thr Tyr Thr Gly  
165 170 175

Gly Gly Leu Pro Pro Thr Arg Ile Ala Leu Pro Gly Lys Ala Ala Met  
180 185 190

Asp Ala Ala Ala His Pro Ser Gly Glu Lys Tyr Leu Tyr Phe Val Ser  
195 200 205

Lys Met Asp Gly Thr Gly Leu Ser Gln Phe Ser His Asp Leu Thr Glu  
210 215 220

His Asn Ala Ala Val Arg Lys Tyr Ile Leu Lys Lys  
225 230 235

<210> 37  
<211> 897  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 37  
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gaccgcatcg tgttcagcag gcatgttttg acagcggcgg cctacgtttt ggggtgtgcac 120  
aacaggctgc atacggggac gtacagattg ctttcggaag tgtctgcttg ggatatcttg 180  
cagaaaatgc gcggcggcag gccggattcc gttaccgtgc agattatcga aggttcgcgt 240  
ttttcgcata tgaggaaagt catcgacgca acgcccagaca tcggacacga caccaaaggc 300  
tgagcaatg aaaaactgat ggcggaagtt gcgcccgatg ctttcagcgg caatcctgaa 360  
gggcagtttt ttcccagacag ctacgaaatc gatgcggggc gcagcgattt gcagatttac 420  
caaaccgcct acaaggcgat gcaacgccgc ctgaacgagg catgggcagg caggcaggac 480  
gggctgcctt ataaaaaccc ttatgaaatg ctgattatgg cgagcctgat cgaaaaggaa 540  
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ggtatgcgcc tgcaaaccga cccgtccgtg atttacggca tgggtgcggc atacaagggc 660  
aaaatccgta aagccgacct gcgccgcgac acgccgtaca acacctatac gggcgggggc 720  
ttgccgcaa cccggattgc gctgcccggc aaggcggcaa tggatgccgc cgcccacccg 780  
tcggcgaaa aatacctgta tttcgtgtcc aaaatggacg gcacgggctt gagccagttc 840  
agccatgatt tgaccgaaca caacgccgcc gtccgcaaat atattttgaa aaaataa 897

<210> 38  
<211> 298  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 38  
Tyr Arg Ile Lys Ile Ala Lys Asn Gln Gly Ile Ser Ser Val Gly Arg  
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Lys Leu Ala Glu Asp Arg Ile Val Phe Ser Arg His Val Leu Thr Ala  
20 25 30

Ala Ala Tyr Val Leu Gly Val His Asn Arg Leu His Thr Gly Thr Tyr  
35 40 45

Arg Leu Pro Ser Glu Val Ser Ala Trp Asp Ile Leu Gln Lys Met Arg  
50 55 60

Gly Gly Arg Pro Asp Ser Val Thr Val Gln Ile Ile Glu Gly Ser Arg



cagaaatggc	ggcagattga	gcctataccg	ggtaaggcgc	aaaaacgggc	ggggtggctg	420
cggaacgtgc	tgaggggaaag	aggaaatcag	catctggacg	gacgggaaga	agtgtggct	480
caggcgacg	aaggacag					498

<210> 40  
 <211> 166  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 40  
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 1 5 10 15  
 Val Ser Ala Ala Gly Gly Gly Ala Gly Asp Met Lys Gln Pro Lys Glu  
 20 25 30  
 Val Gly Lys Val Phe Arg Lys Gln Gln Arg Tyr Ser Glu Glu Glu Ile  
 35 40 45  
 Lys Asn Glu Arg Ala Arg Leu Ala Ala Val Gly Glu Arg Val Asn Gln  
 50 55 60  
 Ile Phe Thr Leu Leu Gly Gly Glu Thr Ala Leu Gln Lys Gly Gln Ala  
 65 70 75 80  
 Gly Thr Ala Leu Ala Thr Tyr Met Leu Met Leu Glu Arg Thr Lys Ser  
 85 90 95  
 Pro Glu Val Ala Glu Arg Ala Leu Glu Met Ala Val Ser Leu Asn Ala  
 100 105 110  
 Phe Glu Gln Ala Glu Met Ile Tyr Gln Lys Trp Arg Gln Ile Glu Pro  
 115 120 125  
 Ile Pro Gly Lys Ala Gln Lys Arg Ala Gly Trp Leu Arg Asn Val Leu  
 130 135 140  
 Arg Glu Arg Gly Asn Gln His Leu Asp Gly Arg Glu Glu Val Leu Ala  
 145 150 155 160  
 Gln Ala Asp Glu Gly Gln  
 165

<210> 41  
 <211> 1845  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 41  
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 ttcagaaagc agcagcggtta cagcgaggaa gaaatcaaaa acgaacgcgc acggcttgcg 180  
 gcagtgggagc agcgggttaa tcagatatatt acgttgctgg gaggggaaac cgccttgcaa 240  
 aaggggcagg cgggaacggc tctggcaacc tatatgctga tggtggaacg cacaaaatcc 300  
 cccgaagtgc ccgaacgcgc cttggaaatg gccgtgtcgc tgaacgcgtt tgaacaggcg 360  
 gaaatgattt atcagaaatg gcggcagatt gagcctatac cgggtaaggc gcaaaaacgg 420

gcgggggtggc	tgcggaacgt	gctgagggaa	agaggaaatc	agcatctgga	cggactggaa	480
gaagtgtctg	ctcaggcgga	cgaaggacag	aaccgcaggg	tgtttttatt	gttggcacaa	540
gccgccgtgc	aacaggacgg	gttggcgcaa	aaagcatcga	aagcggttcg	ccgcgcggcg	600
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cgcgaaaagg	aaaaggcaat	cggagctttg	cagcgtttgg	cgaagctcga	tacggaaata	720
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gaacgcaatc	cgaatgcaga	cctgtatatt	caggcagcga	tattggcggc	aaaccgaaaa	960
gaaggtgctt	ccgttatcga	cggctacgcc	gaaaaggcat	acggcagggg	gacggaggaa	1020
cagcggagca	gggcggcgct	aacggcggcg	atgatgtatg	ccgaccgcag	ggattacgcc	1080
aaagtcaggc	agtggctgaa	aaaagtatcc	gcgcgggaat	acctgttcga	caaagggtgtg	1140
ctggcggctg	cggcggctgt	cgagttggac	ggcggcaggg	cggctttgcg	gcagatcggc	1200
aggggtgcgga	aacttcccga	acagcagggg	cggatatttta	cggcagacaa	tttgtccaaa	1260
atacagatgc	tcgccctgtc	gaagctgccc	gataaacggg	aggctttgag	ggggttggac	1320
aagattatcg	aaaaaccgcc	tgccggcagt	aatacagagt	tacaggcaga	ggcattggta	1380
cagcggtcag	ttgtttacga	tcggcttggc	aagcggaaaa	aatgatttc	agatcttgaa	1440
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ctgaccgatt	ccaaacgttt	ggacgaaggt	ttcgccctgc	ttcagacggc	ataccaaatc	1560
aaccggagc	ataccgtgt	caacgacagc	ataggctggg	cgtattacct	gaaaggcgac	1620
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gccgcccatt	tgggcgaagt	gttgtgggca	ttgggcgaac	gcgatcaggc	ggttgacgta	1740
tggacgcagg	cggcacacct	tacgggagac	aagaaaatat	ggcgggaaac	gctcaaacgt	1800
cacggcatcg	cattgccccca	accttcccga	aaacctcgga	aataa		1845

<210> 42  
 <211> 614  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 42  
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 20 25 30  
 Gln Pro Lys Glu Val Gly Lys Val Phe Arg Lys Gln Gln Arg Tyr Ser  
 35 40 45  
 Glu Glu Glu Ile Lys Asn Glu Arg Ala Arg Leu Ala Ala Val Gly Glu  
 50 55 60  
 Arg Val Asn Gln Ile Phe Thr Leu Leu Gly Gly Glu Thr Ala Leu Gln  
 65 70 75 80  
 Lys Gly Gln Ala Gly Thr Ala Leu Ala Thr Tyr Met Leu Met Leu Glu  
 85 90 95  
 Arg Thr Lys Ser Pro Glu Val Ala Glu Arg Ala Leu Glu Met Ala Val  
 100 105 110  
 Ser Leu Asn Ala Phe Glu Gln Ala Glu Met Ile Tyr Gln Lys Trp Arg  
 115 120 125  
 Gln Ile Glu Pro Ile Pro Gly Lys Ala Gln Lys Arg Ala Gly Trp Leu

130				135				140							
Arg	Asn	Val	Leu	Arg	Glu	Arg	Gly	Asn	Gln	His	Leu	Asp	Gly	Leu	Glu
145					150					155					160
Glu	Val	Leu	Ala	Gln	Ala	Asp	Glu	Gly	Gln	Asn	Arg	Arg	Val	Phe	Leu
				165					170					175	
Leu	Leu	Ala	Gln	Ala	Ala	Val	Gln	Gln	Asp	Gly	Leu	Ala	Gln	Lys	Ala
			180					185					190		
Ser	Lys	Ala	Val	Arg	Arg	Ala	Ala	Leu	Lys	Tyr	Glu	His	Leu	Pro	Glu
		195					200					205			
Ala	Ala	Val	Ala	Asp	Val	Val	Phe	Ser	Val	Gln	Gly	Arg	Glu	Lys	Glu
		210				215					220				
Lys	Ala	Ile	Gly	Ala	Leu	Gln	Arg	Leu	Ala	Lys	Leu	Asp	Thr	Glu	Ile
225					230					235					240
Leu	Pro	Pro	Thr	Leu	Met	Thr	Leu	Arg	Leu	Thr	Ala	Arg	Lys	Tyr	Pro
				245					250					255	
Glu	Ile	Leu	Asp	Gly	Phe	Phe	Glu	Gln	Thr	Asp	Thr	Gln	Asn	Leu	Ser
			260						265				270		
Ala	Val	Trp	Gln	Glu	Met	Glu	Ile	Met	Asn	Leu	Val	Ser	Leu	His	Arg
		275					280					285			
Leu	Asp	Asp	Ala	Tyr	Ala	Arg	Leu	Asn	Val	Leu	Leu	Glu	Arg	Asn	Pro
		290				295					300				
Asn	Ala	Asp	Leu	Tyr	Ile	Gln	Ala	Ala	Ile	Leu	Ala	Ala	Asn	Arg	Lys
305					310					315					320
Glu	Gly	Ala	Ser	Val	Ile	Asp	Gly	Tyr	Ala	Glu	Lys	Ala	Tyr	Gly	Arg
				325					330					335	
Gly	Thr	Glu	Glu	Gln	Arg	Ser	Arg	Ala	Ala	Leu	Thr	Ala	Ala	Met	Met
			340						345				350		
Tyr	Ala	Asp	Arg	Arg	Asp	Tyr	Ala	Lys	Val	Arg	Gln	Trp	Leu	Lys	Lys
		355					360					365			
Val	Ser	Ala	Pro	Glu	Tyr	Leu	Phe	Asp	Lys	Gly	Val	Leu	Ala	Ala	Ala
		370				375					380				
Ala	Ala	Val	Glu	Leu	Asp	Gly	Gly	Arg	Ala	Ala	Leu	Arg	Gln	Ile	Gly
385					390					395					400
Arg	Val	Arg	Lys	Leu	Pro	Glu	Gln	Gln	Gly	Arg	Tyr	Phe	Thr	Ala	Asp
				405					410					415	
Asn	Leu	Ser	Lys	Ile	Gln	Met	Leu	Ala	Leu	Ser	Lys	Leu	Pro	Asp	Lys
			420					425					430		

Arg Glu Ala Leu Arg Gly Leu Asp Lys Ile Ile Glu Lys Pro Pro Ala  
 435 440 445  
 Gly Ser Asn Thr Glu Leu Gln Ala Glu Ala Leu Val Gln Arg Ser Val  
 450 455 460  
 Val Tyr Asp Arg Leu Gly Lys Arg Lys Lys Met Ile Ser Asp Leu Glu  
 465 470 475 480  
 Arg Ala Phe Arg Leu Ala Pro Asp Asn Ala Gln Ile Met Asn Asn Leu  
 485 490 495  
 Gly Tyr Ser Leu Leu Thr Asp Ser Lys Arg Leu Asp Glu Gly Phe Ala  
 500 505 510  
 Leu Leu Gln Thr Ala Tyr Gln Ile Asn Pro Asp Asp Thr Ala Val Asn  
 515 520 525  
 Asp Ser Ile Gly Trp Ala Tyr Tyr Leu Lys Gly Asp Ala Glu Ser Ala  
 530 535 540  
 Leu Pro Tyr Leu Arg Tyr Ser Phe Glu Asn Asp Pro Glu Pro Glu Val  
 545 550 555 560  
 Ala Ala His Leu Gly Glu Val Leu Trp Ala Leu Gly Glu Arg Asp Gln  
 565 570 575  
 Ala Val Asp Val Trp Thr Gln Ala Ala His Leu Thr Gly Asp Lys Lys  
 580 585 590  
 Ile Trp Arg Glu Thr Leu Lys Arg His Gly Ile Ala Leu Pro Gln Pro  
 595 600 605  
 Ser Arg Lys Pro Arg Lys  
 610

<210> 43  
 <211> 1839  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
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 <222> (217)..(217)  
 <223> N= Unknown

<220>  
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 <222> (333)..(333)  
 <223> N= Unknown

<220>  
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 <222> (478)..(478)  
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<222> (499)..(499)  
<223> N= Unknown

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<223> N= Unknown

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<223> N= Unknown

<220>  
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<222> (1609)..(1609)  
<223> N= Unknown

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aagcagcagc gttacagcga ggaagaaatc aaaaacgaac gcgcacggct tgccggcagtg 180  
ggcgagcggg ttaatcagat atttacgttg ctgggagggg aaaccgcctt gcaaaagggg 240  
caggcgggaa cggctctggc aacctatatg ctgatgttgg aacgcacaaa atccccgaa 300  
gtcgccgaac gcgccttgga aatggccgtg tcnctgaacg cgtttgaaca ggcggaaatg 360  
atztatcaga aatggcgga gattgagcct ataccgggta aggcgcaaaa acgggcgggg 420  
tggtctgcga acgtgctgag ggaaagagga aatcagcatc tagacggact ggaagaantg 480  
ctggctcagg cggacgaang acagaaccgc aggggtgttt tattgttggc acaagccgcc 540  
gtgcaacagg acgggttggc gcaaaaagca tcgaaagcgg ttcgccgcgc gccgttgaga 600  
tatgaacatc tgcccgaagc ggcggttgcc gatgtggtgt tcagcgtaca ggnacgcgaa 660  
aaggaaaagg caatcggagc tttgcagcgt ttggcgaagc tcgatacggg aatattgccc 720  
cccactttaa tgacgttgcg tctgactgca cgcaaatac ccgaaatact cgacggcttt 780  
ttcgagcaga cagacaccca aaacctttcg gccgtctggc aggaaatgga aattatgaat 840  
ctggtttccc tgcacaggct ggatgatgcc tatgcgcgtt tgaacgtgct gttggaacgc 900  
aatccgaatg cagacctgta tattcaggca gcgatattgg cggcaaaccg aaaagaangt 960  
gcttccggtta tcgacggcta cgccgaaaag gcatacggca gggggacggg ggaacagcgg 1020  
ggcagggcgg caatgacggc ggcatgata tatgccgacc gaagggatta caccaaagtc 1080  
aggcagtggg tgaaaaaagt gtccgcgcgc gaataacctgt tcgacaaaagg tgtgctggcg 1140  
gctgcggcgg ctgtcgagtt ggacngcggc agggcggtt tgcggcagat cggcagggtg 1200  
cggaaacttc ccgaacagca ggggcggtat ttacggcag acaatttgtc caaaatacag 1260  
atgttcgccc tgtcgaagct gcccgaacaa cgggaggctt tgaggggggt ggacaagatt 1320  
atcgaaaaac cgcctgccgg cagtaataca gagttacagg cagaggcatt ggtacagcgg 1380  
tcagttgttt acgatcggct tggcaagcgg aaaaaaatga tttcagatct tgaaagggcg 1440  
ttcaggcttg caccgcgataa cgctcagatt atgaataatc tgggctacag cctgctttcc 1500  
gattccaaac gtttggacga aggcttcgcc ctgcttcaga cggcatacca aatcaaccgc 1560  
gacgataccg ctgtcaacga cagcataggc tgggcgtatt acctgaaang cgacgcggaa 1620  
agcgcgctgc cgtatctgcg gtattcgttt gaaaacgacc ccgagcccga agttgccgcc 1680  
catttgggcg aagtgttgtg ggcattgggc gaacgcgatc aggcggttga cgtatggacg 1740  
caggcggcac accttacggg agacaagaaa atatggcggg aaacgctcaa acgtcacggc 1800



atcgcatgtgc cccaaccttc ccgaaaacct cggaataa

1839

<210> 44  
<211> 612  
<212> PRT  
<213> Neisseria meningitidis

<220>  
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<223> Xaa= any amino acid

<220>  
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<223> Xaa= any amino acid

<220>  
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<223> Xaa= any amino acid

<220>  
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<223> Xaa= any amino acid

<220>  
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<222> (320)..(320)  
<223> Xaa= any amino acid

<220>  
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<222> (389)..(389)  
<223> Xaa= any amino acid

<220>  
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<222> (537)..(537)  
<223> Xaa= any amino acid

<400> 44  
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Leu Ala Gly Gln Ala Tyr Ala Ala Gly Ala Ala Asp Ala Lys Pro Pro  
20 25 30

Lys Glu Val Gly Lys Val Phe Arg Lys Gln Gln Arg Tyr Ser Glu Glu  
35 40 45

Glu Ile Lys Asn Glu Arg Ala Arg Leu Ala Ala Val Gly Glu Arg Val  
50 55 60

Asn Gln Ile Phe Thr Leu Leu Gly Xaa Glu Thr Ala Leu Gln Lys Gly

65	70	75	80
Gln Ala Gly Thr	Ala Leu Ala Thr	Tyr Met Leu Met	Leu Glu Arg Thr
	85	90	95
Lys Ser Pro Glu	Val Ala Glu Arg	Ala Leu Glu Met	Ala Val Ser Leu
	100	105	110
Asn Ala Phe Glu	Gln Ala Glu Met	Ile Tyr Gln Lys	Trp Arg Gln Ile
	115	120	125
Glu Pro Ile Pro	Gly Lys Ala Gln	Lys Arg Ala Gly	Trp Leu Arg Asn
	130	135	140
Val Leu Arg Glu	Arg Gly Asn Gln	His Leu Asp Gly	Leu Glu Glu Xaa
	145	150	155
Leu Ala Gln Ala	Asp Glu Xaa Gln	Asn Arg Arg Val	Phe Leu Leu Leu
	165	170	175
Ala Gln Ala Ala	Val Gln Gln Asp	Gly Leu Ala Gln	Lys Ala Ser Lys
	180	185	190
Ala Val Arg Arg	Ala Ala Leu Arg	Tyr Glu His Leu	Pro Glu Ala Ala
	195	200	205
Val Ala Asp Val	Val Phe Ser Val	Gln Xaa Arg Glu	Lys Glu Lys Ala
	210	215	220
Ile Gly Ala Leu	Gln Arg Leu Ala	Lys Leu Asp Thr	Glu Ile Leu Pro
	225	230	235
Pro Thr Leu Met	Thr Leu Arg Leu	Thr Ala Arg Lys	Tyr Pro Glu Ile
	245	250	255
Leu Asp Gly Phe	Phe Glu Gln Thr	Asp Thr Gln Asn	Leu Ser Ala Val
	260	265	270
Trp Gln Glu Met	Glu Ile Met Asn	Leu Val Ser Leu	His Arg Leu Asp
	275	280	285
Asp Ala Tyr Ala	Arg Leu Asn Val	Leu Leu Glu Arg	Asn Pro Asn Ala
	290	295	300
Asp Leu Tyr Ile	Gln Ala Ala Ile	Leu Ala Ala Asn	Arg Lys Glu Xaa
	305	310	315
Ala Ser Val Ile	Asp Gly Tyr Ala	Glu Lys Ala Tyr	Gly Arg Gly Thr
	325	330	335
Gly Glu Gln Arg	Gly Arg Ala Ala	Met Thr Ala Ala	Met Ile Tyr Ala
	340	345	350
Asp Arg Arg Asp	Tyr Thr Lys Val	Arg Gln Trp Leu	Lys Lys Val Ser
	355	360	365

Ala Pro Glu Tyr Leu Phe Asp Lys Gly Val Leu Ala Ala Ala Ala Ala  
 370 375 380  
 Val Glu Leu Asp Xaa Gly Arg Ala Ala Leu Arg Gln Ile Gly Arg Val  
 385 390 395 400  
 Arg Lys Leu Pro Glu Gln Gln Gly Arg Tyr Phe Thr Ala Asp Asn Leu  
 405 410 415  
 Ser Lys Ile Gln Met Phe Ala Leu Ser Lys Leu Pro Asp Lys Arg Glu  
 420 425 430  
 Ala Leu Arg Gly Leu Asp Lys Ile Ile Glu Lys Pro Pro Ala Gly Ser  
 435 440 445  
 Asn Thr Glu Leu Gln Ala Glu Ala Leu Val Gln Arg Ser Val Val Tyr  
 450 455 460  
 Asp Arg Leu Gly Lys Arg Lys Lys Met Ile Ser Asp Leu Glu Arg Ala  
 465 470 475 480  
 Phe Arg Leu Ala Pro Asp Asn Ala Gln Ile Met Asn Asn Leu Gly Tyr  
 485 490 495  
 Ser Leu Leu Ser Asp Ser Lys Arg Leu Asp Glu Gly Phe Ala Leu Leu  
 500 505 510  
 Gln Thr Ala Tyr Gln Ile Asn Pro Asp Asp Thr Ala Val Asn Asp Ser  
 515 520 525  
 Ile Gly Trp Ala Tyr Tyr Leu Lys Xaa Asp Ala Glu Ser Ala Leu Pro  
 530 535 540  
 Tyr Leu Arg Tyr Ser Phe Glu Asn Asp Pro Glu Pro Glu Val Ala Ala  
 545 550 555 560  
 His Leu Gly Glu Val Leu Trp Ala Leu Gly Glu Arg Asp Gln Ala Val  
 565 570 575  
 Asp Val Trp Thr Gln Ala Ala His Leu Thr Gly Asp Lys Lys Ile Trp  
 580 585 590  
 Arg Glu Thr Leu Lys Arg His Gly Ile Ala Leu Pro Gln Pro Ser Arg  
 595 600 605  
 Lys Pro Arg Lys  
 610

<210> 45  
 <211> 8  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*  
 <220>  
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 <222> (1)..(8)

<223> N= Unknown

<400> 45  
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8

<210> 46  
<211> 300  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 46  
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20 25 30  
Leu Pro Lys Glu Val Gly Lys Val Leu Arg Lys His Arg Arg Tyr Ser  
35 40 45  
Glu Glu Glu Ile Lys Asn Glu Arg Ala Arg Leu Ala Ala Val Gly Glu  
50 55 60  
Arg Val Asn Arg Val Phe Thr Leu Leu Gly Gly Glu Thr Ala Leu Gln  
65 70 75 80  
Lys Gly Gln Ala Gly Thr Ala Leu Ala Thr Tyr Met Leu Met Leu Glu  
85 90 95  
Arg Thr Lys Ser Pro Glu Val Ala Glu Arg Ala Leu Glu Met Ala Val  
100 105 110  
Ser Leu Asn Ala Phe Glu Gln Ala Glu Met Ile Tyr Gln Lys Trp Arg  
115 120 125  
Gln Ile Glu Pro Ile Pro Gly Glu Ala Gln Lys Pro Ala Gly Trp Leu  
130 135 140  
Arg Asn Val Leu Lys Glu Gly Gly Asn Pro His Leu Asp Arg Leu Glu  
145 150 155 160  
Glu Val Pro Ala Gln Ser Asp Tyr Val His Gln Pro Met Ile Phe Leu  
165 170 175  
Leu Leu Val Gln Ala Ala Val Gln His Gly Gly Val Ala Gln Lys Pro  
180 185 190  
Ser Lys Ala Val Arg Pro Ala Ala Tyr Asn Tyr Glu Val Leu Pro Glu  
195 200 205  
Thr Ala Gly Ala Asp Ala Val Phe Cys Val Gln Gly Pro Gln Tyr Glu  
210 215 220  
Lys Ala Ile Gln Ser Phe Pro Pro Cys Gly Arg Asn Pro Gln Thr Glu  
225 230 235 240

Asn Ile Ala Pro Pro Phe Asn Glu Leu Phe Arg Pro Thr Ala Arg Pro  
 245 250 255

Ile Ser Pro Lys Leu Leu Gln Arg Phe Phe Arg Thr Glu Pro Asn Leu  
 260 265 270

Ala Lys Pro Phe Arg Pro Pro Gly Pro Glu Met Glu Thr Tyr Gln Thr  
 275 280 285

Gly Phe Pro Arg Pro Leu Thr Arg Asn Asn Pro Thr  
 290 295 300

<210> 47  
 <211> 1839  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 47  
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 gcgtatgctg ccggcgcggc ggatgtggag ctgccgaagg aagtcggaaa ggttttaagg 120  
 aaacatcggc gttacagcga ggaagaaatc aaaaacgaac gcgcacggct tgcggcagtg 180  
 ggcgaacggg tcaacagggg gtttacgctg ttgggcgggtg aaacggcttt gcagaaaggg 240  
 caggcgggaa cggctctggc aacctatatg ctgatgttgg aacgcacaaa atccccgaa 300  
 gtcgccgaac gcgccttggg aatggccgtg tgcgtgaacg cgtttgaaca ggcggaaatg 360  
 atttatcaga aatggcgagg gatcgagcct ataccgggtg aggcgcaaaa accggcgggg 420  
 tggctgcgga acgtattgaa ggaaggggga aatcagcatc tggacgggtt gaaagaggtg 480  
 ctggcgcaat cggacgatgt gcaaaaacgc aggatatttt tgctgctggg gcaagccgcc 540  
 gtgcagcagg gtgggggtgg tcaaaaagca tcgaaagcgg ttcgccgtgc ggcgttgaag 600  
 tatgaacatc tgcccgaagc ggcgggttgc gatgcggtgt tcggcgtaaa gggacgcgaa 660  
 aaggaaaaagg caatcgaagc tttgcagcgt ttggcgaagc tcgatacggg aatattgccc 720  
 cccacttttaa tgacgttgcg tctgactgca cgcaaatact ccgaaatact cgacggcttt 780  
 ttcgagcaga cagacaccca aaacctttcg gccgtctggc aggaaatgga aattatgaat 840  
 ctgggtttccc tgcgtaagcc ggatgatgcc tatgcgcgtt tgaacgtgct gttggaacac 900  
 aaccggaatg caaacctgta tattcaggcg gcgatattgg cggcaaaccg aaaagaaggt 960  
 gcgtccgtta tcgacgggta cgcgaaaag gcatacggca gggggacggg ggaacagcgg 1020  
 ggcagggcgg caatgacggc ggcgatgata tatgccgacc gcagggatta cgccaaagtc 1080  
 aggcagtggg tgaaaaaagt gtccgcgcgg gaatacctgt tcgacaaagg cgtgctggcg 1140  
 gctgcggcgg ctgccgaatt ggacggaggc cgggcggctt tgccgcagat cggcaggggtg 1200  
 cggaaacttc ccgaacagca ggggcgggtat ttacggcag acaatttgtc caaaatacag 1260  
 atgctcgccc tgtegaagct gcccgaacaa cgggaagccc tgatcgggct gaacaacatc 1320  
 atcgccaaac tttcggcggc gggaagcacg gaaccttttg cggaagcatt ggcacagcgt 1380  
 tccattattt acgaacagtt cggcaaacgg ggaaaaatga ttgccgacct tgaaaccgcg 1440  
 ctcaaactta cgcccataa tgcacaaatt atgaataatc tgggctacag cctgctttcc 1500  
 gattccaaac gtttggacga gggtttcgcc ctgcttcaga cggcatacca aatcaaccgg 1560  
 gacgataccg ccgttaacga cagcataggc tgggcgtatt acctgaaagg cgacgcggaa 1620  
 agcgcgctgc cgtatctgcg gtattcgttt gaaaacgacc ccgagcccga agttgccgcc 1680  
 catttgggcg aagtgttgtg ggcattgggc gaacgcgata aggcgggtga cgtatggacg 1740  
 caggcgggcac acctagggg agacaagaaa atatggcggg agacgctcaa acgctacgga 1800  
 atcgcccttg cccgagccttc ccgaaaaccc cggaaataa 1839

<210> 48  
 <211> 612  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 48

Met	Leu	Pro	Ala	Arg	Phe	Thr	Ile	Leu	Ser	Val	Leu	Ala	Ala	Ala	Leu	1	5	10	15
Leu	Ala	Gly	Gln	Ala	Tyr	Ala	Ala	Gly	Ala	Ala	Asp	Val	Glu	Leu	Pro	20	25	30	
Lys	Glu	Val	Gly	Lys	Val	Leu	Arg	Lys	His	Arg	Arg	Tyr	Ser	Glu	Glu	35	40	45	
Glu	Ile	Lys	Asn	Glu	Arg	Ala	Arg	Leu	Ala	Ala	Val	Gly	Glu	Arg	Val	50	55	60	
Asn	Arg	Val	Phe	Thr	Leu	Leu	Gly	Gly	Glu	Thr	Ala	Leu	Gln	Lys	Gly	65	70	75	80
Gln	Ala	Gly	Thr	Ala	Leu	Ala	Thr	Tyr	Met	Leu	Met	Leu	Glu	Arg	Thr	85	90	95	
Lys	Ser	Pro	Glu	Val	Ala	Glu	Arg	Ala	Leu	Glu	Met	Ala	Val	Ser	Leu	100	105	110	
Asn	Ala	Phe	Glu	Gln	Ala	Glu	Met	Ile	Tyr	Gln	Lys	Trp	Arg	Gln	Ile	115	120	125	
Glu	Pro	Ile	Pro	Gly	Glu	Ala	Gln	Lys	Pro	Ala	Gly	Trp	Leu	Arg	Asn	130	135	140	
Val	Leu	Lys	Glu	Gly	Gly	Asn	Gln	His	Leu	Asp	Gly	Leu	Lys	Glu	Val	145	150	155	160
Leu	Ala	Gln	Ser	Asp	Asp	Val	Gln	Lys	Arg	Arg	Ile	Phe	Leu	Leu	Leu	165	170	175	
Val	Gln	Ala	Ala	Val	Gln	Gln	Gly	Gly	Val	Ala	Gln	Lys	Ala	Ser	Lys	180	185	190	
Ala	Val	Arg	Arg	Ala	Ala	Leu	Lys	Tyr	Glu	His	Leu	Pro	Glu	Ala	Ala	195	200	205	
Val	Ala	Asp	Ala	Val	Phe	Gly	Val	Gln	Gly	Arg	Glu	Lys	Glu	Lys	Ala	210	215	220	
Ile	Glu	Ala	Leu	Gln	Arg	Leu	Ala	Lys	Leu	Asp	Thr	Glu	Ile	Leu	Pro	225	230	235	240
Pro	Thr	Leu	Met	Thr	Leu	Arg	Leu	Thr	Ala	Arg	Lys	Tyr	Pro	Glu	Ile	245	250	255	
Leu	Asp	Gly	Phe	Phe	Glu	Gln	Thr	Asp	Thr	Gln	Asn	Leu	Ser	Ala	Val	260	265	270	
Trp	Gln	Glu	Met	Glu	Ile	Met	Asn	Leu	Val	Ser	Leu	Arg	Lys	Pro	Asp	275	280	285	
Asp	Ala	Tyr	Ala	Arg	Leu	Asn	Val	Leu	Leu	Glu	His	Asn	Pro	Asn	Ala	290	295	300	

Asn	Leu	Tyr	Ile	Gln	Ala	Ala	Ile	Leu	Ala	Ala	Asn	Arg	Lys	Glu	Gly	305	310	315	320
Ala	Ser	Val	Ile	Asp	Gly	Tyr	Ala	Glu	Lys	Ala	Tyr	Gly	Arg	Gly	Thr	325	330	335	
Gly	Glu	Gln	Arg	Gly	Arg	Ala	Ala	Met	Thr	Ala	Ala	Met	Ile	Tyr	Ala	340	345	350	
Asp	Arg	Arg	Asp	Tyr	Ala	Lys	Val	Arg	Gln	Trp	Leu	Lys	Lys	Val	Ser	355	360	365	
Ala	Pro	Glu	Tyr	Leu	Phe	Asp	Lys	Gly	Val	Leu	Ala	Ala	Ala	Ala	Ala	370	375	380	
Ala	Glu	Leu	Asp	Gly	Gly	Arg	Ala	Ala	Leu	Arg	Gln	Ile	Gly	Arg	Val	385	390	395	400
Arg	Lys	Leu	Pro	Glu	Gln	Gln	Gly	Arg	Tyr	Phe	Thr	Ala	Asp	Asn	Leu	405	410	415	
Ser	Lys	Ile	Gln	Met	Leu	Ala	Leu	Ser	Lys	Leu	Pro	Asp	Lys	Arg	Glu	420	425	430	
Ala	Leu	Ile	Gly	Leu	Asn	Asn	Ile	Ile	Ala	Lys	Leu	Ser	Ala	Ala	Gly	435	440	445	
Ser	Thr	Glu	Pro	Leu	Ala	Glu	Ala	Leu	Ala	Gln	Arg	Ser	Ile	Ile	Tyr	450	455	460	
Glu	Gln	Phe	Gly	Lys	Arg	Gly	Lys	Met	Ile	Ala	Asp	Leu	Glu	Thr	Ala	465	470	475	480
Leu	Lys	Leu	Thr	Pro	Asp	Asn	Ala	Gln	Ile	Met	Asn	Asn	Leu	Gly	Tyr	485	490	495	
Ser	Leu	Leu	Ser	Asp	Ser	Lys	Arg	Leu	Asp	Glu	Gly	Phe	Ala	Leu	Leu	500	505	510	
Gln	Thr	Ala	Tyr	Gln	Ile	Asn	Pro	Asp	Asp	Thr	Ala	Val	Asn	Asp	Ser	515	520	525	
Ile	Gly	Trp	Ala	Tyr	Tyr	Leu	Lys	Gly	Asp	Ala	Glu	Ser	Ala	Leu	Pro	530	535	540	
Tyr	Leu	Arg	Tyr	Ser	Phe	Glu	Asn	Asp	Pro	Glu	Pro	Glu	Val	Ala	Ala	545	550	555	560
His	Leu	Gly	Glu	Val	Leu	Trp	Ala	Leu	Gly	Glu	Arg	Asp	Gln	Ala	Val	565	570	575	
Asp	Val	Trp	Thr	Gln	Ala	Ala	His	Leu	Arg	Gly	Asp	Lys	Lys	Ile	Trp	580	585	590	
Arg	Glu	Thr	Leu	Lys	Arg	Tyr	Gly	Ile	Ala	Leu	Pro	Glu	Pro	Ser	Arg	595	600	605	

Lys Pro Arg Lys  
610

<210> 49  
<211> 724  
<212> DNA  
<213> Neisseria meningitidis

<400> 49  
aacctctacg ccggccccgca gaccacatcc gtcacgcgcaa acatcgccga caacctgcaa 60  
ctggccaaag actacggcaa agtacactgg ttcgcctccc cgctcttctg gtcctgaac 120  
caactgcaca acatcatcgg caactggggc tgggcgatta tcgttttaac catcatcgtc 180  
aaagccgtac tgtatccatt gaccaacgcc tcttaccgct ctatggcgaa aatgcgtgcc 240  
gccgcaccca aactgcaagc catcaaagag aaatacggcg acgaccgat ggcgcaacaa 300  
caggcgatga tgcagcttta cacagacgag aaaatcaacc cgactgggcg gctgcctgcc 360  
tatgctgttg caaatccccg tcttcatcgg attgtattgg gcattgttcg cctccgtaga 420  
attgcgccag gcaccttggc tgggttgat taccgacctc agccgcgccg acccctacta 480  
catcctgccc atcattatgg cggcaacgat gttcgcccaa acttatctga acccgccgcc 540  
gaccgaccg atgcaggcga aaatgatgaa aatcatgccg ttggttttct csgwrtggt 600  
cttcttcttc cctgcgggks tggattgta ctgggtagtc aacaacctcc tgaccatcgc 660  
ccagcaatgg cacatcaacc gcagcatcga aaaacaacgc gcccaaggcg aagtcgtttc 720  
ctaa 724

<210> 50  
<211> 240  
<212> PRT  
<213> Neisseria meningitidis

<220>  
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<222> (198)..(199)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (207)..(207)  
<223> Xaa= any amino acid

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Asp Asn Leu Gln Leu Ala Lys Asp Tyr Gly Lys Val His Trp Phe Ala  
20 25 30  
Ser Pro Leu Phe Trp Leu Leu Asn Gln Leu His Asn Ile Ile Gly Asn  
35 40 45  
Trp Gly Trp Ala Ile Ile Val Leu Thr Ile Ile Val Lys Ala Val Leu  
50 55 60  
Tyr Pro Leu Thr Asn Ala Ser Tyr Arg Ser Met Ala Lys Met Arg Ala  
65 70 75 80  
Ala Ala Pro Lys Leu Gln Ala Ile Lys Glu Lys Tyr Gly Asp Asp Arg  
85 90 95



Met Ala Gln Gln Gln Ala Met Met Gln Leu Tyr Thr Asp Glu Lys Ile  
 100 105 110

Asn Pro Leu Gly Gly Cys Leu Pro Met Leu Leu Gln Ile Pro Val Phe  
 115 120 125

Ile Gly Leu Tyr Trp Ala Leu Phe Ala Ser Val Glu Leu Arg Gln Ala  
 130 135 140

Pro Trp Leu Gly Trp Ile Thr Asp Leu Ser Arg Ala Asp Pro Tyr Tyr  
 145 150 155 160

Ile Leu Pro Ile Ile Met Ala Ala Thr Met Phe Ala Gln Thr Tyr Leu  
 165 170 175

Asn Pro Pro Pro Thr Asp Pro Met Gln Ala Lys Met Met Lys Ile Met  
 180 185 190

Pro Leu Val Phe Ser Xaa Xaa Phe Phe Phe Phe Pro Ala Gly Xaa Val  
 195 200 205

Leu Tyr Trp Val Val Asn Asn Leu Leu Thr Ile Ala Gln Gln Trp His  
 210 215 220

Ile Asn Arg Ser Ile Glu Lys Gln Arg Ala Gln Gly Glu Val Val Ser  
 225 230 235 240

<210> 51  
 <211> 1638  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 51  
 atggatttta aaagactcac ggcgtttttc gccatcgcgc tgggtgattat gatcggtctg 60  
 gaaaagatgt tccccactcc gaagccagtc cccgcgcccc aacaggcagc acaacaacag 120  
 gccgtaaccg cttccgcccga agccgcgctc gcgccgcaa cgccgattac cgtaacgacc 180  
 gacacgggtc aagccgtcat tgatgaaaaa agcggcgacc tgcgccggct gaccctgctc 240  
 aaatacaaag caaccggcga cgaaaaataa ccgttcatcc tgtttgccga cggcaaagaa 300  
 tacacctacg tcgccaatc cgaacttttg gacgcgcagg gcaacaacat tctaaaaggc 360  
 atcggcttta gcgcaccgaa aaaacagtac agcttggaa gcgacaaagt tgaagtccgc 420  
 ctgagcgcgc ctgaaacacg cggctctgaaa atcgacaaaag tttatacttt caccaaaggc 480  
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 agcgcggact accgcatcgt ccgcgaccac agcgaaccgc agggtaagg ttactttacc 600  
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35 40 45  
Ala Leu Ala Pro Xaa Xaa Pro Ile Thr Val Thr Thr Asp Thr Val Gln  
50 55 60  
Ala Val Ile Asp Glu Lys Ser Gly Asp Leu Arg Arg Leu Thr Leu Leu  
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Lys Tyr Lys Ala Thr Gly Asp Xaa Asn Lys Pro Phe Ile Leu Phe Gly  
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Asp Gly Lys Xaa Tyr Thr Tyr Xaa Ala Xaa Ser Glu Leu Leu Asp Ala  
100 105 110  
Gln Gly Asn Asn Ile Leu Lys Gly Ile Gly Phe Ser Ala Pro Lys Lys



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Ser Tyr Leu Val Asn Val Arg Phe Asp Ile Ala Asn Gly Ser Gly Gln				165					170					175
Thr Ala Asn Leu Ser Ala Asp Tyr Arg Ile Val Arg Asp His Ser Glu			180					185					190	
Pro Glu Gly Gln Gly Tyr Phe Thr His Ser Tyr Val Gly Pro Val Val	195						200					205		
Tyr Thr Pro Glu Gly Asn Phe Gln Lys Val Ser Phe Ser Asp Leu Asp	210					215					220			
Asp Asp Ala Xaa Ser Gly Lys Ser Glu Ala Glu Tyr Ile Arg Lys Thr	225				230					235				240
Xaa Thr Gly Trp Leu Gly Met Ile Glu His His Phe Met Ser Thr Trp			245					250						255
Ile Leu Gln Pro Lys Gly Gly Gln Ser Val Cys Ala Ala Gly Asp Cys			260				265						270	
Xaa Xaa Asp Ile Lys Arg Arg Asn Asp Lys Leu Tyr Ser Thr Ser Val	275						280					285		
Ser Val Pro Leu Ala Ala Ile Gln Asn Gly Ala Lys Ser Xaa Ala Ser	290					295					300			
Ile Asn Leu Tyr Ala Gly Pro Gln Thr Thr Ser Val Ile Ala Asn Ile	305				310					315				320
Ala Asp Asn Leu Gln Leu Xaa Lys Asp Tyr Gly Lys Val His Trp Phe			325					330					335	
Ala Ser Pro Leu Phe Trp Leu Leu Asn Gln Leu His Asn Ile Ile Gly			340				345					350		
Asn Trp Gly Trp Ala Ile Ile Val Leu Thr Ile Ile Val Lys Ala Val	355					360						365		
Leu Tyr Pro Leu Thr Asn Ala Ser Tyr Arg Ser Met Ala Lys Met Arg	370				375					380				
Ala Ala Ala Pro Lys Leu Gln Ala Ile Lys Glu Lys Tyr Gly Asp Asp	385				390				395					400
Arg Met Ala Gln Gln Gln Ala Met Met Gln Leu Tyr Thr Asp Glu Lys			405					410						415

Ile Asn Pro Leu Gly Gly Cys Leu Pro Met Leu Leu Gln Ile Pro Val  
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 Tyr Ile Leu Pro Ile Ile Met Ala Ala Thr Met Phe Ala Gln Thr Tyr  
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 Met Pro Leu Val Xaa Ser Xaa Xaa Phe Phe Xaa Phe Pro Ala Gly Leu  
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 35 40 45  
 Ile Gly Asn Trp Gly Trp Ala Ile Val Val Leu Thr Ile Ile Val Lys

50

55

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Glu Glu Ile Asn Pro Leu Gly Gly Cys Leu Pro Met Leu Leu Gln Ile  
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Pro Val Phe Ile Gly Leu Tyr Trp Ala Leu Phe Ala Ser Val Glu Leu  
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Arg Gln Ala Pro Trp Leu Gly Trp Ile Thr Asp Leu Ser Arg Ala Asp  
145 150 155 160

Pro Tyr Tyr Ile Leu Pro Ile Ile Met Ala Ala Thr Met Phe Ala Gln  
165 170 175

Thr Tyr Leu Asn Pro Pro Pro Thr Asp Pro Met Gln Ala Lys Met Met  
180 185 190

Lys Ile Met Pro Leu Val Phe Ser Val Met Phe Phe Phe Phe Pro Ala  
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Gly Leu Val Leu Tyr Trp Val Val Asn Asn Leu Leu Thr Ile Ala Gln  
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Val Val Ser

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 Ala Val Ile Asp Glu Lys Ser Gly Asp Leu Arg Arg Leu Thr Leu Leu  
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 Glu Thr Asn Gly Leu Lys Ile Asp Lys Val Tyr Thr Phe Thr Lys Asp  
 145 150 155 160  
 Ser Tyr Leu Val Asn Val Arg Phe Asp Ile Ala Asn Gly Ser Gly Gln  
 165 170 175

Thr	Ala	Asn	Leu	Ser	Ala	Asp	Tyr	Arg	Ile	Val	Arg	Asp	His	Ser	Glu	180	185	190
Pro	Glu	Gly	Gln	Gly	Tyr	Phe	Thr	His	Ser	Tyr	Val	Gly	Pro	Val	Val	195	200	205
Tyr	Thr	Pro	Glu	Gly	Asn	Phe	Gln	Lys	Val	Ser	Phe	Ser	Asp	Leu	Asp	210	215	220
Asp	Asp	Ala	Lys	Ser	Gly	Lys	Ser	Glu	Ala	Glu	Tyr	Ile	Arg	Lys	Thr	225	230	235
Pro	Thr	Gly	Trp	Leu	Gly	Met	Ile	Glu	His	His	Phe	Met	Ser	Thr	Trp	245	250	255
Ile	Leu	Gln	Pro	Lys	Gly	Gly	Gln	Asn	Val	Cys	Ala	Gln	Gly	Asp	Cys	260	265	270
Arg	Ile	Asp	Ile	Lys	Arg	Arg	Asn	Asp	Lys	Leu	Tyr	Ser	Ala	Ser	Val	275	280	285
Ser	Val	Pro	Leu	Thr	Ala	Ile	Pro	Thr	Arg	Gly	Pro	Lys	Pro	Lys	Met	290	295	300
Ala	Val	Asn	Leu	Tyr	Ala	Gly	Pro	Gln	Thr	Thr	Ser	Val	Ile	Ala	Asn	305	310	315
Ile	Ala	Asp	Asn	Leu	Gln	Leu	Ala	Lys	Asp	Tyr	Gly	Lys	Val	His	Trp	325	330	335
Phe	Ala	Ser	Pro	Leu	Phe	Trp	Leu	Leu	Asn	Gln	Leu	His	Asn	Ile	Ile	340	345	350
Gly	Asn	Trp	Gly	Trp	Ala	Ile	Val	Val	Leu	Thr	Ile	Ile	Val	Lys	Ala	355	360	365
Val	Leu	Tyr	Pro	Leu	Thr	Asn	Ala	Ser	Tyr	Arg	Ser	Met	Ala	Lys	Met	370	375	380
Arg	Ala	Ala	Ala	Pro	Lys	Leu	Gln	Thr	Ile	Lys	Glu	Lys	Tyr	Gly	Asp	385	390	395
Asp	Arg	Met	Ala	Gln	Gln	Gln	Ala	Met	Met	Gln	Leu	Tyr	Lys	Asp	Glu	405	410	415
Lys	Ile	Asn	Pro	Leu	Gly	Gly	Cys	Leu	Pro	Met	Leu	Leu	Gln	Ile	Pro	420	425	430
Val	Phe	Ile	Gly	Leu	Tyr	Trp	Ala	Leu	Phe	Ala	Ser	Val	Glu	Leu	Arg	435	440	445
Gln	Ala	Pro	Trp	Leu	Gly	Trp	Ile	Thr	Asp	Leu	Ser	Arg	Ala	Asp	Pro	450	455	460
Tyr	Tyr	Ile	Leu	Pro	Ile	Ile	Met	Ala	Ala	Thr	Met	Phe	Ala	Gln	Thr	465	470	475
																		480

Tyr Leu Asn Pro Pro Pro Thr Asp Pro Met Gln Ala Lys Met Met Lys  
485 490 495

Ile Met Pro Leu Val Phe Ser Val Met Phe Phe Phe Phe Pro Ala Gly  
500 505 510

Leu Val Leu Tyr Trp Val Val Asn Asn Leu Leu Thr Ile Ala Gln Gln  
515 520 525

Trp His Ile Asn Arg Ser Ile Glu Lys Gln Arg Ala Gln Gly Glu Val  
530 535 540

Val Ser  
545

<210> 59  
<211> 379  
<212> DNA  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (51)..(51)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (122)..(122)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (149)..(149)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (237)..(237)  
<223> N= Unknown

<400> 59  
gccgtcttaa tcatcgaatt attgacggga acggtttatc ttttggttgt nagecgggct 60  
ttggcggggt cgggcattgc ttacgggctg accggcagta cgcctgccgc cgtcttgacc 120  
gncgctctgc tttccgcgct gggatattng ttcgtacacg ccaaaaccgc cgtagaaaa 180  
gttgaaacgg attcatatca ggatttggat gccggacaat atgtcgaaat cctccgncac 240  
acaggcggca accgttacga agtttttatt gcggtacgac tggcaggctc aaaatacggg 300  
gcaagaagag cttgaaccag gaactcgcgc cctcattgtc cgcaaggaag gcaaccttct 360  
tattatcaca cacccttaa 379

<210> 60  
<211> 126  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature

<222> (41)..(41)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (50)..(50)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (89)..(89)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (94)..(94)  
<223> Xaa= any amino acid

<400> 60  
Ala Val Leu Ile Ile Glu Leu Leu Thr Gly Thr Val Tyr Leu Leu Val  
1 5 10 15  
Val Ser Ala Ala Leu Ala Gly Ser Gly Ile Ala Tyr Gly Leu Thr Gly  
20 25 30  
Ser Thr Pro Ala Ala Val Leu Thr Xaa Ala Leu Leu Ser Ala Leu Gly  
35 40 45  
Ile Xaa Phe Val His Ala Lys Thr Ala Val Arg Lys Val Glu Thr Asp  
50 55 60  
Ser Tyr Gln Asp Leu Asp Ala Gly Gln Tyr Val Glu Ile Leu Arg His  
65 70 75 80  
Thr Gly Gly Asn Arg Tyr Glu Val Xaa Tyr Arg Gly Thr Xaa Trp Gln  
85 90 95  
Ala Gln Asn Thr Gly Gln Glu Glu Leu Glu Pro Gly Thr Arg Ala Leu  
100 105 110  
Ile Val Arg Lys Glu Gly Asn Leu Leu Ile Ile Thr His Pro  
115 120 125

<210> 61  
<211> 381  
<212> DNA  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (51)..(51)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (122)..(122)

<223> N= Unknown

<220>

<221> misc\_feature

<222> (149)..(149)

<223> N= Unknown

<400> 61

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ttggcggggt	cgggcattgc	ttacgggctg	accggcagta	cgcctgccgc	cgtcttgacc	120
gncgctctgc	tttccgcgct	gggtatttng	ttcgtacacg	ccaaaaccgc	cgttagaaaa	180
gttgaaacgg	attcatatca	ggatttggat	gccggacaat	atgtcgaaat	cctccgacac	240
acaggcggca	accgttacga	agttttttat	cgcgggtacg	actggcaggc	tcaaaatacg	300
gggcaagaag	agcttgaacc	aggaactcgc	gccctcattg	tccgcaagga	aggcaacctt	360
cttattatca	cacaccctta	a				381

<210> 62

<211> 126

<212> PRT

<213> Neisseria meningitidis

<220>

<221> misc\_feature

<222> (41)..(41)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (50)..(50)

<223> Xaa= any amino acid

<400> 62

Ala	Val	Leu	Ile	Ile	Glu	Leu	Leu	Thr	Gly	Thr	Val	Tyr	Leu	Leu	Val
1				5					10					15	

Val	Ser	Ala	Ala	Leu	Ala	Gly	Ser	Gly	Ile	Ala	Tyr	Gly	Leu	Thr	Gly
		20					25						30		

Ser	Thr	Pro	Ala	Ala	Val	Leu	Thr	Xaa	Ala	Leu	Leu	Ser	Ala	Leu	Gly
		35					40					45			

Ile	Xaa	Phe	Val	His	Ala	Lys	Thr	Ala	Val	Arg	Lys	Val	Glu	Thr	Asp
	50					55					60				

Ser	Tyr	Gln	Asp	Leu	Asp	Ala	Gly	Gln	Tyr	Val	Glu	Ile	Leu	Arg	His
65					70				75					80	

Thr	Gly	Gly	Asn	Arg	Tyr	Glu	Val	Phe	Tyr	Arg	Gly	Thr	His	Trp	Gln
			85						90					95	

Ala	Gln	Asn	Thr	Gly	Gln	Glu	Glu	Leu	Glu	Pro	Gly	Thr	Arg	Ala	Leu
		100						105					110		

Ile	Val	Arg	Lys	Glu	Gly	Asn	Leu	Leu	Ile	Ile	Thr	His	Pro		
		115					120					125			



<210> 63  
 <211> 408  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 63  
 atgactgtat ggtttgttgc cgctgttgcc gtcttaatca tcgaattatt gacgggaacg 60  
 gtttatcttt tggttgtcag cgcggctttg gcgggttcgg gcattgccta cgggctgacc 120  
 ggcagcacgc ctgccgccgt cttgaccgcc gctctgcttt ccgcgctggg tatttggttc 180  
 gtacacgcca aaaccgccgt gggaaaagtt gaaacggatt catatcagga ttggatgcc 240  
 gggcaatatg ccgaaatcct ccggcacgca ggcggcaacc gttacgaagt ttttatcgc 300  
 ggtacgcact ggcaggctca aaatacgggg caagaagagc ttgaaccagg aacgcgcgcc 360  
 ctaatcgtcc gcaaggaagg caaccttctt atcatcgcaa aaccttaa 408

<210> 64  
 <211> 135  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 64  
 Met Thr Val Trp Phe Val Ala Ala Val Ala Val Leu Ile Ile Glu Leu  
 1 5 10 15  
 Leu Thr Gly Thr Val Tyr Leu Leu Val Val Ser Ala Ala Leu Ala Gly  
 20 25 30  
 Ser Gly Ile Ala Tyr Gly Leu Thr Gly Ser Thr Pro Ala Ala Val Leu  
 35 40 45  
 Thr Ala Ala Leu Leu Ser Ala Leu Gly Ile Trp Phe Val His Ala Lys  
 50 55 60  
 Thr Ala Val Gly Lys Val Glu Thr Asp Ser Tyr Gln Asp Leu Asp Ala  
 65 70 75 80  
 Gly Gln Tyr Ala Glu Ile Leu Arg His Ala Gly Gly Asn Arg Tyr Glu  
 85 90 95  
 Val Phe Tyr Arg Gly Thr His Trp Gln Ala Gln Asn Thr Gly Gln Glu  
 100 105 110  
 Glu Leu Glu Pro Gly Thr Arg Ala Leu Ile Val Arg Lys Glu Gly Asn  
 115 120 125  
 Leu Leu Ile Ile Ala Lys Pro  
 130 135

<210> 65  
 <211> 408  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 65  
 atgactgtat ggtttgttgc cgctgttgcc gtcttaatca tcgaattatt gacgggaacg 60  
 gtttatcttt tggttgtcag cgcggctttg gcgggttcgg gcattgccta cgggctgact 120  
 ggcagcacgc ctgccgccgt cttgaccgcc gcactgcttt ccgcgctggg catttggttc 180

gtacatgcc	aaaccgccgt	gggaaaagtt	gaaacggatt	catatcagga	tttggatacc	240
ggaaaatatg	ccgaaatcct	ccgatacaca	ggcggcaacc	gttacgaagt	tttttatcgc	300
ggtacgcact	ggcaggcgca	aaatacgggg	caggaaagtgt	ttgaaccggg	aacgcgcgcc	360
ctcatcgctcc	gcaaagaagg	taaccttctt	atcatcgcaa	acccttaa		408

<210> 66  
 <211> 135  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 66  
 Met Thr Val Trp Phe Val Ala Ala Val Ala Val Leu Ile Ile Glu Leu  
 1 5 10 15  
 Leu Thr Gly Thr Val Tyr Leu Leu Val Val Ser Ala Ala Leu Ala Gly  
 20 25 30  
 Ser Gly Ile Ala Tyr Gly Leu Thr Gly Ser Thr Pro Ala Ala Val Leu  
 35 40 45  
 Thr Ala Ala Leu Leu Ser Ala Leu Gly Ile Trp Phe Val His Ala Lys  
 50 55 60  
 Thr Ala Val Gly Lys Val Glu Thr Asp Ser Tyr Gln Asp Leu Asp Thr  
 65 70 75 80  
 Gly Lys Tyr Ala Glu Ile Leu Arg Tyr Thr Gly Gly Asn Arg Tyr Glu  
 85 90 95  
 Val Phe Tyr Arg Gly Thr His Trp Gln Ala Gln Asn Thr Gly Gln Glu  
 100 105 110  
 Val Phe Glu Pro Gly Thr Arg Ala Leu Ile Val Arg Lys Glu Gly Asn  
 115 120 125  
 Leu Leu Ile Ile Ala Asn Pro  
 130 135

<210> 67  
 <211> 407  
 <212> DNA  
 <213> *Neisseria meningitidis*

atgtwtgatt	tcggtttrgg	cgactgggtt	tttgtcggca	ttatcgccct	gatwgtcctc	60
ggccccgaac	gcstgcccga	ggccgcccgc	aycgccggac	ggctcatcgg	caggctgcaa	120
cgctttgtcg	gcagcgtcaa	acaggaattt	gacactcaaa	tcgaactgga	agaactgagg	180
aaggcaaagc	aggaatttga	agctgccgcc	gctcaggttc	gagacagcct	caaagaaacc	240
ggtacggata	tggaaggcaa	tctgcacgac	atttccgacg	gtctgaagcc	ttgggaaaaa	300
ctgcccgaac	agcggacacc	tgccgatttc	ggtgtcgatg	aaaacggcaa	tccgcttccc	360
gatgcggcaa	acaccctatc	agacggcatt	tccgacgtta	tgccgctc		407

<210> 68  
 <211> 136  
 <212> PRT  
 <213> *Neisseria meningitidis*

<220>  
 <221> misc\_feature  
 <222> (2)..(2)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (25)..(25)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (31)..(31)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (119)..(119)  
 <223> Xaa= any amino acid

<400> 68  
 Met Xaa Asp Phe Gly Leu Gly Glu Leu Val Phe Val Gly Ile Ile Ala  
 1 5 10 15  
 Leu Ile Val Leu Gly Pro Glu Arg Xaa Pro Glu Ala Ala Arg Xaa Ala  
 20 25 30  
 Gly Arg Leu Ile Gly Arg Leu Gln Arg Phe Val Gly Ser Val Lys Gln  
 35 40 45  
 Glu Phe Asp Thr Gln Ile Glu Leu Glu Glu Leu Arg Lys Ala Lys Gln  
 50 55 60  
 Glu Phe Glu Ala Ala Ala Ala Gln Val Arg Asp Ser Leu Lys Glu Thr  
 65 70 75 80  
 Gly Thr Asp Met Glu Gly Asn Leu His Asp Ile Ser Asp Gly Leu Lys  
 85 90 95  
 Pro Trp Glu Lys Leu Pro Glu Gln Arg Thr Pro Ala Asp Phe Gly Val  
 100 105 110  
 Asp Glu Asn Gly Asn Pro Xaa Ser Arg Cys Gly Lys His Pro Ile Arg  
 115 120 125  
 Arg His Phe Arg Arg Tyr Ala Val  
 130 135

<210> 69  
 <211> 687  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 69  
 atgttttgatt tcggtttggg cgagctgggt tttgtcggca ttatcgccct gattgtcctc 60  
 ggccccgaac gcctgccccga ggccgcccgc accgcggac ggctcatcgg caggctgcaa 120

cgctttgtcg	gcagcgtcaa	acaggaattt	gacactcaaa	tcgaactgga	agaactgagg	180
aaggcaaagc	aggaatttga	agctgccgcc	gttcagggttc	gagacagcct	caaagaaacc	240
ggtacggata	tggaaggcaa	tctgcacgac	atttccgacg	gtctgaagcc	ttgggaaaaa	300
ctgcccgaac	agcggacacc	tgccgatttc	ggtgtcgatg	aaaacggcaa	tccgcttccc	360
gatgcggaac	acaccctatc	agacggcatt	tccgacgtta	tgccgtccga	acgttcctac	420
gcttccgccg	aaacccttgg	ggacagcggg	caaaccggca	gtacagccga	acccgcggaa	480
accgaccaag	accgcgcgatg	gcgggaatac	ctgactgctt	ctgccgcgcg	acccgctcgta	540
cagaccgtcg	aagtcagcta	tatcgatact	gctgttgaaa	cgctgtttcc	gcacaccact	600
tccttgcgca	aacaggcaat	aagccgcaaa	cgcgattttc	gtccgaaaca	ccgcgcctaaa	660
cctaaattgc	gcgtccgtaa	atcataa				687

<210> 70  
 <211> 228  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 70  
 Met Phe Asp Phe Gly Leu Gly Glu Leu Val Phe Val Gly Ile Ile Ala  
 1 5 10 15  
 Leu Ile Val Leu Gly Pro Glu Arg Leu Pro Glu Ala Ala Arg Thr Ala  
 20 25 30  
 Gly Arg Leu Ile Gly Arg Leu Gln Arg Phe Val Gly Ser Val Lys Gln  
 35 40 45  
 Glu Phe Asp Thr Gln Ile Glu Leu Glu Glu Leu Arg Lys Ala Lys Gln  
 50 55 60  
 Glu Phe Glu Ala Ala Ala Ala Gln Val Arg Asp Ser Leu Lys Glu Thr  
 65 70 75 80  
 Gly Thr Asp Met Glu Gly Asn Leu His Asp Ile Ser Asp Gly Leu Lys  
 85 90 95  
 Pro Trp Glu Lys Leu Pro Glu Gln Arg Thr Pro Ala Asp Phe Gly Val  
 100 105 110  
 Asp Glu Asn Gly Asn Pro Leu Pro Asp Ala Ala Asn Thr Leu Ser Asp  
 115 120 125  
 Gly Ile Ser Asp Val Met Pro Ser Glu Arg Ser Tyr Ala Ser Ala Glu  
 130 135 140  
 Thr Leu Gly Asp Ser Gly Gln Thr Gly Ser Thr Ala Glu Pro Ala Glu  
 145 150 155 160  
 Thr Asp Gln Asp Arg Ala Trp Arg Glu Tyr Leu Thr Ala Ser Ala Ala  
 165 170 175  
 Ala Pro Val Val Gln Thr Val Glu Val Ser Tyr Ile Asp Thr Ala Val  
 180 185 190  
 Glu Thr Pro Val Pro His Thr Thr Ser Leu Arg Lys Gln Ala Ile Ser  
 195 200 205

Arg Lys Arg Asp Phe Arg Pro Lys His Arg Ala Lys Pro Lys Leu Arg  
 210 215 220

Val Arg Lys Ser  
 225

<210> 71  
 <211> 687  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 71  
 atgtttgatt tcggtttggg cgagctgggt tttgtcggca ttatcgccct gattgtcctc 60  
 ggccccgaac gcctgcccga ggccgcccgc accgcccggac ggctcatcgg caggctgcaa 120  
 cgctttgtcg gcagcgtaaa acaggaattt gacacgcaaa tcgaactgga agaactaagg 180  
 aaggcaaaagc aggaatttga agctgcccgt gctcagggtt gagacagcct caaagaaacc 240  
 ggtacggata tggagggtaa tctgcacgac atttccgacg gtctgaagcc ttgggaaaaa 300  
 ctgcccgaac agcgcacgcc tgctgatttc ggtgtcgatg aaaacggcaa tccctttccc 360  
 gatgcggcaa acaccctatt agacggcatt tccgacgtta tgccgtccga acgttccctac 420  
 gcttccgccc aaacccttgg ggacagcggg caaacccgca gtacagccga acccgcgga 480  
 accgaccaag accgtgcatg gcgggaatac ctgactgctt ctgcccgcgc acccgctgta 540  
 cagaccgtcg aagtcagcta tatcgatacc gctgttgaaa cccctgttcc gcataccact 600  
 tcgctgcgta aacaggcaat aagccgcaaa cgcgatttgc gtccctaaatc ccgcgcctaaa 660  
 cctaaattgc gcgtccgtaa atcataa 687

<210> 72  
 <211> 228  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 72  
 Met Phe Asp Phe Gly Leu Gly Glu Leu Val Phe Val Gly Ile Ile Ala  
 1 5 10 15  
 Leu Ile Val Leu Gly Pro Glu Arg Leu Pro Glu Ala Ala Arg Thr Ala  
 20 25 30  
 Gly Arg Leu Ile Gly Arg Leu Gln Arg Phe Val Gly Ser Val Lys Gln  
 35 40 45  
 Glu Phe Asp Thr Gln Ile Glu Leu Glu Glu Leu Arg Lys Ala Lys Gln  
 50 55 60  
 Glu Phe Glu Ala Ala Ala Ala Gln Val Arg Asp Ser Leu Lys Glu Thr  
 65 70 75 80  
 Gly Thr Asp Met Glu Gly Asn Leu His Asp Ile Ser Asp Gly Leu Lys  
 85 90 95  
 Pro Trp Glu Lys Leu Pro Glu Gln Arg Thr Pro Ala Asp Phe Gly Val  
 100 105 110  
 Asp Glu Asn Gly Asn Pro Phe Pro Asp Ala Ala Asn Thr Leu Leu Asp  
 115 120 125  
 Gly Ile Ser Asp Val Met Pro Ser Glu Arg Ser Tyr Ala Ser Ala Glu

130

135

140

Thr Leu Gly Asp Ser Gly Gln Thr Gly Ser Thr Ala Glu Pro Ala Glu  
145 150 155 160

Thr Asp Gln Asp Arg Ala Trp Arg Glu Tyr Leu Thr Ala Ser Ala Ala  
165 170 175

Ala Pro Val Val Gln Thr Val Glu Val Ser Tyr Ile Asp Thr Ala Val  
180 185 190

Glu Thr Pro Val Pro His Thr Thr Ser Leu Arg Lys Gln Ala Ile Ser  
195 200 205

Arg Lys Arg Asp Leu Arg Pro Lys Ser Arg Ala Lys Pro Lys Leu Arg  
210 215 220

Val Arg Lys Ser  
225

<210> 73  
<211> 8  
<212> DNA  
<213> Neisseria gonorrhoeae

<220>  
<221> misc\_feature  
<222> (1)..(8)  
<223> N= Unknown

<400> 73  
nnnnnnnn

8

<210> 74  
<211> 136  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 74  
Met Phe Asp Phe Gly Leu Gly Glu Leu Ile Phe Val Gly Ile Ile Ala  
1 5 10 15

Leu Ile Val Leu Gly Pro Glu Arg Leu Pro Glu Ala Ala Arg Thr Ala  
20 25 30

Gly Arg Leu Ile Gly Arg Leu Gln Arg Phe Val Gly Ser Val Lys Gln  
35 40 45

Glu Leu Asp Thr Gln Ile Glu Leu Glu Glu Leu Arg Lys Val Lys Gln  
50 55 60

Ala Phe Glu Ala Ala Ala Ala Gln Val Arg Asp Ser Leu Lys Glu Thr  
65 70 75 80

Asp Thr Asp Met Gln Asn Ser Leu His Asp Ile Ser Asp Gly Leu Lys  
85 90 95

Pro Trp Glu Lys Leu Pro Glu Gln Arg Thr Pro Ala Asp Phe Gly Val  
100 105 110

Asp Glu Lys Gly Asn Ser Leu Ser Arg Tyr Gly Lys His Arg Ile Arg  
115 120 125

Arg His Phe Arg Arg Tyr Ala Val  
130 135

<210> 75  
<211> 690  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 75  
atgtttgatt tcggtttggg cgagctgatt tttgtcggca ttatcgccct gattgtcctt 60  
ggtccagaac gcctgcccga agccgcccgc actgccggac ggcttatcgg caggctgcaa 120  
cgctttgtag gaagcgtcaa acaagaactt gacactcaaa tcgaactgga agagctgagg 180  
aaggtcaagc aggcattcga agctgccgcc gctcaggttc gagacagcct caaagaaacc 240  
gatacggata tgcagaacag tctgcacgac atttccgacg gtctgaagcc ttgggaaaaa 300  
ctgcccgaac agcgcacgcc tgccgatttc ggtgtcgatg aaaacggcaa tccccctccc 360  
gatacggcaa acaccgtatc agacggcatt tccgacgtta tgccgtctga acgttccgat 420  
acttccgccg aaacccttgg ggacgacagg caaacgggca gtacagccga acctgcccga 480  
accgacaaag accgcgcgat gcgggaatac ctgactgctt ctgccgccgc acctgtcgta 540  
cagagggccg tcgaagtcag ctatatcgat actgctgttg aaacgcctgt tccgcacacc 600  
acttcctgc gcaaacaggc aataaacccg aaacgcgatt tttgtccgaa acaccgcgcc 660  
aaaccgaaat tgcgcgtccg taaatcataa 690

<210> 76  
<211> 229  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 76  
Met Phe Asp Phe Gly Leu Gly Glu Leu Ile Phe Val Gly Ile Ile Ala  
1 5 10 15  
Leu Ile Val Leu Gly Pro Glu Arg Leu Pro Glu Ala Ala Arg Thr Ala  
20 25 30  
Gly Arg Leu Ile Gly Arg Leu Gln Arg Phe Val Gly Ser Val Lys Gln  
35 40 45  
Glu Leu Asp Thr Gln Ile Glu Leu Glu Glu Leu Arg Lys Val Lys Gln  
50 55 60  
Ala Phe Glu Ala Ala Ala Ala Gln Val Arg Asp Ser Leu Lys Glu Thr  
65 70 75 80  
Asp Thr Asp Met Gln Asn Ser Leu His Asp Ile Ser Asp Gly Leu Lys  
85 90 95  
Pro Trp Glu Lys Leu Pro Glu Gln Arg Thr Pro Ala Asp Phe Gly Val  
100 105 110  
Asp Glu Asn Gly Asn Pro Leu Pro Asp Thr Ala Asn Thr Val Ser Asp

115

120

125

Gly Ile Ser Asp Val Met Pro Ser Glu Arg Ser Asp Thr Ser Ala Glu  
130 135 140

Thr Leu Gly Asp Asp Arg Gln Thr Gly Ser Thr Ala Glu Pro Ala Glu  
145 150 155 160

Thr Asp Lys Asp Arg Ala Trp Arg Glu Tyr Leu Thr Ala Ser Ala Ala  
165 170 175

Ala Pro Val Val Gln Arg Ala Val Glu Val Ser Tyr Ile Asp Thr Ala  
180 185 190

Val Glu Thr Pro Val Pro His Thr Thr Ser Leu Arg Lys Gln Ala Ile  
195 200 205

Asn Arg Lys Arg Asp Phe Cys Pro Lys His Arg Ala Lys Pro Lys Leu  
210 215 220

Arg Val Arg Lys Ser  
225

<210> 77

<211> 639

<212> DNA

<213> Neisseria meningitidis

<400> 77

atgcaagcac	ggctgctgat	acctattcct	ttttcagttt	ttattttatc	cgctgcggga	60
cactgacagg	tattccatcg	catggcggag	ktaaacgctt	tgcggtcgaa	caagaacttg	120
tggccgcttc	tgccagagct	gccgttaaag	acatggattt	acaggcatta	cacggacgaa	180
aagttgcatt	gtacattgcc	actatgggcg	accaagggtc	aggcagtttg	acaggggggt	240
cgctactcca	ttgatgcack	grtwcstggc	gaatacataa	acagccctgc	cgtccgtacc	300
gattacacct	atccacgtta	cgaaaccacc	gctgaaacaa	catcaggcgg	tttgacaggt	360
ttaaccactt	ctttatctac	acttaatgcc	cctgcactct	ctcgcaccca	atcagacggt	420
agcggaagta	aaagcagtct	gggcttaaatt	attggcggga	tgggggatta	tcgaaatgaa	480
accttgacga	ctaaccgcgc	cgacactgcc	tttctttccc	acttggtaca	gaccgtattt	540
ttcctgcgcg	gcatagacgt	tgtttctcct	gccaatgccg	atacagatgt	gtttattaac	600
atcgacgtat	tcggaacgat	acgcaacaga	accgaaatg			639

<210> 78

<211> 213

<212> PRT

<213> Neisseria meningitidis

<220>

<221> misc\_feature

<222> (31)..(31)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (87)..(89)

<223> Xaa= any amino acid



<400> 78  
Met Gln Ala Arg Leu Leu Ile Pro Ile Leu Phe Ser Val Phe Ile Leu  
1 5 10 15  
Ser Ala Cys Gly Thr Leu Thr Gly Ile Pro Ser His Gly Gly Xaa Lys  
20 25 30  
Arg Phe Ala Val Glu Gln Glu Leu Val Ala Ala Ser Ala Arg Ala Ala  
35 40 45  
Val Lys Asp Met Asp Leu Gln Ala Leu His Gly Arg Lys Val Ala Leu  
50 55 60  
Tyr Ile Ala Thr Met Gly Asp Gln Gly Ser Gly Ser Leu Thr Gly Gly  
65 70 75 80  
Arg Tyr Ser Ile Asp Ala Xaa Xaa Xaa Gly Glu Tyr Ile Asn Ser Pro  
85 90 95  
Ala Val Arg Thr Asp Tyr Thr Tyr Pro Arg Tyr Glu Thr Thr Ala Glu  
100 105 110  
Thr Thr Ser Gly Gly Leu Thr Gly Leu Thr Thr Ser Leu Ser Thr Leu  
115 120 125  
Asn Ala Pro Ala Leu Ser Arg Thr Gln Ser Asp Gly Ser Gly Ser Lys  
130 135 140  
Ser Ser Leu Gly Leu Asn Ile Gly Gly Met Gly Asp Tyr Arg Asn Glu  
145 150 155 160  
Thr Leu Thr Thr Asn Pro Arg Asp Thr Ala Phe Leu Ser His Leu Val  
165 170 175  
Gln Thr Val Phe Phe Leu Arg Gly Ile Asp Val Val Ser Pro Ala Asn  
180 185 190  
Ala Asp Thr Asp Val Phe Ile Asn Ile Asp Val Phe Gly Thr Ile Arg  
195 200 205  
Asn Arg Thr Glu Met  
210

<210> 79  
<211> 963  
<212> DNA  
<213> Neisseria meningitidis

<400> 79  
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acactgacag gtattccatc gcatggcgga ggtaaagcgt ttgcggtcga acaagaactt 120  
gtggccgctt ctgccagagc tgccgttaaa gacatggatt tacaggcatt acacggacga 180  
aaagttgcat tgtacattgc cactatgggc gaccaagggt caggcagttt gacagggggg 240  
cgctactcca ttgatgcact gattcgtggc gaatacataa acagccctgc cgtccgtacc 300  
gattacacct atccacgtta cgaaaccacc gctgaaacaa catcaggcgg tttgacaggt 360  
ttaaccactt ctttatctac acttaatgcc cctgcactct ctcgcaccca atcagacggt 420

agcgggaagta	aaagcagtct	gggcttaa	attggcg	gggata	tcgaaatgaa	480
accttgacga	ctaaccgcg	cgacactgcc	tttctttccc	acttggtaca	gaccgtattt	540
ttcctgcgcg	gcatagacgt	tgtttctcct	gccaatgccg	atacagatgt	gtttattaac	600
atcgacgtat	tcggaacgat	acgcaacaga	accgaaatgc	acctatacaa	tgccgaaaca	660
ctgaaagccc	aaacaaaact	ggaatatttc	gcagtagaca	gaaccaataa	aaaattgctc	720
atcaaacc	aaaccaatgc	gtttgaagct	gcctataaag	aaaattacgc	attgtggatg	780
gggccgtata	aagtaagcaa	aggaattaaa	ccgacggaag	gattaatggt	cgatttctcc	840
gatatccgac	catacggcaa	tcatacgggt	aactccgccc	catccgtaga	ggctgataac	900
agtcatgagg	ggtatggata	cagcgatgaa	gtagtgcgac	aacatagaca	aggacaacct	960
tga						963

<210> 80  
 <211> 320  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 80  
 Met Gln Ala Arg Leu Leu Ile Pro Ile Leu Phe Ser Val Phe Ile Leu  
 1 5 10 15  
 Ser Ala Cys Gly Thr Leu Thr Gly Ile Pro Ser His Gly Gly Gly Lys  
 20 25 30  
 Arg Phe Ala Val Glu Gln Glu Leu Val Ala Ala Ser Ala Arg Ala Ala  
 35 40 45  
 Val Lys Asp Met Asp Leu Gln Ala Leu His Gly Arg Lys Val Ala Leu  
 50 55 60  
 Tyr Ile Ala Thr Met Gly Asp Gln Gly Ser Gly Ser Leu Thr Gly Gly  
 65 70 75 80  
 Arg Tyr Ser Ile Asp Ala Leu Ile Arg Gly Glu Tyr Ile Asn Ser Pro  
 85 90 95  
 Ala Val Arg Thr Asp Tyr Thr Tyr Pro Arg Tyr Glu Thr Thr Ala Glu  
 100 105 110  
 Thr Thr Ser Gly Gly Leu Thr Gly Leu Thr Thr Ser Leu Ser Thr Leu  
 115 120 125  
 Asn Ala Pro Ala Leu Ser Arg Thr Gln Ser Asp Gly Ser Gly Ser Lys  
 130 135 140  
 Ser Ser Leu Gly Leu Asn Ile Gly Gly Met Gly Asp Tyr Arg Asn Glu  
 145 150 155 160  
 Thr Leu Thr Thr Asn Pro Arg Asp Thr Ala Phe Leu Ser His Leu Val  
 165 170 175  
 Gln Thr Val Phe Phe Leu Arg Gly Ile Asp Val Val Ser Pro Ala Asn  
 180 185 190  
 Ala Asp Thr Asp Val Phe Ile Asn Ile Asp Val Phe Gly Thr Ile Arg  
 195 200 205

Asn Arg Thr Glu Met His Leu Tyr Asn Ala Glu Thr Leu Lys Ala Gln  
 210 215 220  
 Thr Lys Leu Glu Tyr Phe Ala Val Asp Arg Thr Asn Lys Lys Leu Leu  
 225 230 235 240  
 Ile Lys Pro Lys Thr Asn Ala Phe Glu Ala Ala Tyr Lys Glu Asn Tyr  
 245 250 255  
 Ala Leu Trp Met Gly Pro Tyr Lys Val Ser Lys Gly Ile Lys Pro Thr  
 260 265 270  
 Glu Gly Leu Met Val Asp Phe Ser Asp Ile Arg Pro Tyr Gly Asn His  
 275 280 285  
 Thr Gly Asn Ser Ala Pro Ser Val Glu Ala Asp Asn Ser His Glu Gly  
 290 295 300  
 Tyr Gly Tyr Ser Asp Glu Val Val Arg Gln His Arg Gln Gly Gln Pro  
 305 310 315 320

<210> 81  
 <211> 963  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 81  
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 aactgacag gtattccatc gcatggcgga ggtaaagcgt ttgcgggtcga acaagaactt 120  
 gtggccgctt ctgccagagc tgccgttaaa gacatggatt tacaggcatt acacggacga 180  
 aaagttgcat tgtacattgc aactatgggc gaccaagggt caggcagttt gacaggggggt 240  
 cgctactcca ttgatgcact gattcgtggc gaatacataa acagccctgc cgtccgtacc 300  
 gattacacct atccacgtta cgaaaccacc gctgaaacaa catcaggcgg tttgacaggt 360  
 ttaaccactt ctttatctac acttaatgcc cctgcactct cgcgcaccca atcagacggg 420  
 agcggaagta aaagcagtct gggcttaaat attggcgga tgggggatta tcgaaatgaa 480  
 accttgacga ctaaccgcg cgacactgcc tttctttccc acttggtaca gaccgtattt 540  
 ttcctgcgcg gcatagacgt tgtttctcct gccaatgccg atacggatgt gtttattaac 600  
 atcgacgtat tcggaacgat acgcaacaga accgaaatgc acctatacaa tgccgaaaca 660  
 ctgaaagccc aaacaaaact ggaatatttc gcagtagaca gaaccaataa aaaattgctc 720  
 atcaaaccac aaaccaatgc gtttgaagct gcctataaag aaaattacgc attgtggatg 780  
 ggaccgtata aagtaagcaa aggaattaaa ccgacagaag gattaatggt cgatttctcc 840  
 gatatccaac catacggcaa tcatatgggt aactctgccc catccgtaga ggctgataac 900  
 agtcatgagg ggtatggata cagcgatgaa gcagtgcgac gacatagaca agggcaacct 960  
 tga 963

<210> 82  
 <211> 320  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 82  
 Met Gln Ala Arg Leu Leu Ile Pro Ile Leu Phe Ser Val Phe Ile Leu  
 1 5 10 15  
 Ser Ala Cys Gly Thr Leu Thr Gly Ile Pro Ser His Gly Gly Gly Lys  
 20 25 30

Arg Phe Ala Val Glu Gln Glu Leu Val Ala Ala Ser Ala Arg Ala Ala  
 35 40 45  
 Val Lys Asp Met Asp Leu Gln Ala Leu His Gly Arg Lys Val Ala Leu  
 50 55 60  
 Tyr Ile Ala Thr Met Gly Asp Gln Gly Ser Gly Ser Leu Thr Gly Gly  
 65 70 75 80  
 Arg Tyr Ser Ile Asp Ala Leu Ile Arg Gly Glu Tyr Ile Asn Ser Pro  
 85 90 95  
 Ala Val Arg Thr Asp Tyr Thr Tyr Pro Arg Tyr Glu Thr Thr Ala Glu  
 100 105 110  
 Thr Thr Ser Gly Gly Leu Thr Gly Leu Thr Thr Ser Leu Ser Thr Leu  
 115 120 125  
 Asn Ala Pro Ala Leu Ser Arg Thr Gln Ser Asp Gly Ser Gly Ser Lys  
 130 135 140  
 Ser Ser Leu Gly Leu Asn Ile Gly Gly Met Gly Asp Tyr Arg Asn Glu  
 145 150 155 160  
 Thr Leu Thr Thr Asn Pro Arg Asp Thr Ala Phe Leu Ser His Leu Val  
 165 170 175  
 Gln Thr Val Phe Phe Leu Arg Gly Ile Asp Val Val Ser Pro Ala Asn  
 180 185 190  
 Ala Asp Thr Asp Val Phe Ile Asn Ile Asp Val Phe Gly Thr Ile Arg  
 195 200 205  
 Asn Arg Thr Glu Met His Leu Tyr Asn Ala Glu Thr Leu Lys Ala Gln  
 210 215 220  
 Thr Lys Leu Glu Tyr Phe Ala Val Asp Arg Thr Asn Lys Lys Leu Leu  
 225 230 235 240  
 Ile Lys Pro Lys Thr Asn Ala Phe Glu Ala Ala Tyr Lys Glu Asn Tyr  
 245 250 255  
 Ala Leu Trp Met Gly Pro Tyr Lys Val Ser Lys Gly Ile Lys Pro Thr  
 260 265 270  
 Glu Gly Leu Met Val Asp Phe Ser Asp Ile Gln Pro Tyr Gly Asn His  
 275 280 285  
 Met Gly Asn Ser Ala Pro Ser Val Glu Ala Asp Asn Ser His Glu Gly  
 290 295 300  
 Tyr Gly Tyr Ser Asp Glu Ala Val Arg Arg His Arg Gln Gly Gln Pro  
 305 310 315 320

<210> 83  
 <211> 963

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 83

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acactgacag gtattccatc gcatggcgga ggcaaacgct tcgcggtcga acaagaactt 120
gtggccgctt ctgccagagc tgccgttaaa gacatggatt tacaggcatt acacggacga 180
aaagttgcat tgtacattgc aactatgggc gaccaaggtt caggcagttt gacagggggg 240
cgctactcca ttgatgcact gattcgcggc gaatacataa acagccctgc cgtccgcacc 300
gattacacct atccgcgtta cgaaaccacc gctgaaacaa catcaggcgg tttgacgggt 360
ttaaccactt ctttatctac acttaatgcc cctgcactct cgcgcacca atcagacgg 420
agcgggaagta ggagcagtct gggcttaaat attggcggga tgggggatta tcgaaatgaa 480
accttgacga ccaaccgcg cgacactgcc tttctttccc acttggtgca gaccgtattt 540
ttcctgcgcg gcatagacgt tgtttctcct gccaatgccg atacagatgt gtttattaac 600
atcgacgtat tcggaacgat acgcaacaga accgaaatgc acctatacaa tgccgaaaca 660
ctgaaagccc aaacaaaact ggaatatttc gcagtagaca gaaccaataa aaaattgctc 720
atcaaaccga aaaccaatgc gtttgaagct gcctataaag aaaattacgc attgtggatg 780
gggcccgtata aagtaagcaa aggaatcaaa ccgacggaag gattgatggt cgatttctcc 840
gatatccaac catacggcaa tcatacgggt aactccgccc catccgtaga ggctgataac 900
agtcatgagg ggtatggata cagcgatgaa gcagtgcgac aacatagaca agggcaacct 960
tga
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<210> 84

<211> 320

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 84

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Met Arg Ala Arg Leu Leu Ile Pro Ile Leu Phe Ser Val Phe Ile Leu
1          5          10          15

Ser Ala Cys Gly Thr Leu Thr Gly Ile Pro Ser His Gly Gly Gly Lys
20          25          30

Arg Phe Ala Val Glu Gln Glu Leu Val Ala Ala Ser Ala Arg Ala Ala
35          40          45

Val Lys Asp Met Asp Leu Gln Ala Leu His Gly Arg Lys Val Ala Leu
50          55          60

Tyr Ile Ala Thr Met Gly Asp Gln Gly Ser Gly Ser Leu Thr Gly Gly
65          70          75          80

Arg Tyr Ser Ile Asp Ala Leu Ile Arg Gly Glu Tyr Ile Asn Ser Pro
85          90          95

Ala Val Arg Thr Asp Tyr Thr Tyr Pro Arg Tyr Glu Thr Thr Ala Glu
100         105         110

Thr Thr Ser Gly Gly Leu Thr Gly Leu Thr Thr Ser Leu Ser Thr Leu
115         120         125

Asn Ala Pro Ala Leu Ser Arg Thr Gln Ser Asp Gly Ser Gly Ser Arg
130         135         140

Ser Ser Leu Gly Leu Asn Ile Gly Gly Met Gly Asp Tyr Arg Asn Glu
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145	150	155	160
Thr Leu Thr Thr Asn Pro Arg Asp Thr Ala Phe Leu Ser His Leu Val			
	165	170	175
Gln Thr Val Phe Phe Leu Arg Gly Ile Asp Val Val Ser Pro Ala Asn			
	180	185	190
Ala Asp Thr Asp Val Phe Ile Asn Ile Asp Val Phe Gly Thr Ile Arg			
	195	200	205
Asn Arg Thr Glu Met His Leu Tyr Asn Ala Glu Thr Leu Lys Ala Gln			
	210	215	220
Thr Lys Leu Glu Tyr Phe Ala Val Asp Arg Thr Asn Lys Lys Leu Leu			
	225	230	235
Ile Lys Pro Lys Thr Asn Ala Phe Glu Ala Ala Tyr Lys Glu Asn Tyr			
	245	250	255
Ala Leu Trp Met Gly Pro Tyr Lys Val Ser Lys Gly Ile Lys Pro Thr			
	260	265	270
Glu Gly Leu Met Val Asp Phe Ser Asp Ile Gln Pro Tyr Gly Asn His			
	275	280	285
Thr Gly Asn Ser Ala Pro Ser Val Glu Ala Asp Asn Ser His Glu Gly			
	290	295	300
Tyr Gly Tyr Ser Asp Glu Ala Val Arg Gln His Arg Gln Gly Gln Pro			
	305	310	315
			320

<210> 85  
 <211> 590  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 85	
ggcagcacaa aaaacaggcg gttgaacgga aaaaccgtat ttacgatgat gccgggtatg	60
atattcggcg tattcacggg cgcatttctcc gcaaaatata tccccgcgtt cgggcttcaa	120
atatttcttca tctgtttttt aaccgcccgtc gcattcaaaa cactgcatac cgaccctcag	180
acggcatccc gcccgctgcc cggactgccc rgactgactg cggtttccac actgttcggc	240
acaatgtcga gctgggtcgg cataggcggc ggttcacttt ccgccccctt cttaatccac	300
tgcggcttcc ccgcccataa agccatcggc acatcatccg gccttgcttg gccgattgca	360
ctctccggcg caatatcgta tctgctcaac ggccctgaata ttgcaggatt gccgaaggg	420
tcaactgggct tcttttacct gcccgccgtc gccgtcctca gcgcggcaac cattgccttt	480
gccccgctcg gtgtcaaaac cgcccacaaa ctttcttctg ccaaactcaa aaaatcttcg	540
gcattatggt gcttttgatt gccggaaaaa tgctgtacaa cctgctttaa	590

<210> 86  
 <211> 196  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature

<222> (71)..(71)

<223> Xaa= any amino acid

<400> 86

Gly Gln His Lys Lys Gln Ala Val Asn Gly Lys Thr Val Phe Thr Met  
1 5 10 15

Met Pro Gly Met Ile Phe Gly Val Phe Thr Gly Ala Phe Ser Ala Lys  
20 25 30

Tyr Ile Pro Ala Phe Gly Leu Gln Ile Phe Phe Ile Leu Phe Leu Thr  
35 40 45

Ala Val Ala Phe Lys Thr Leu His Thr Asp Pro Gln Thr Ala Ser Arg  
50 55 60

Pro Leu Pro Gly Leu Pro Xaa Leu Thr Ala Val Ser Thr Leu Phe Gly  
65 70 75 80

Thr Met Ser Ser Trp Val Gly Ile Gly Gly Gly Ser Leu Ser Val Pro  
85 90 95

Phe Leu Ile His Cys Gly Phe Pro Ala His Lys Ala Ile Gly Thr Ser  
100 105 110

Ser Gly Leu Ala Trp Pro Ile Ala Leu Ser Gly Ala Ile Ser Tyr Leu  
115 120 125

Leu Asn Gly Leu Asn Ile Ala Gly Leu Pro Glu Gly Ser Leu Gly Phe  
130 135 140

Leu Tyr Leu Pro Ala Val Ala Val Leu Ser Ala Ala Thr Ile Ala Phe  
145 150 155 160

Ala Pro Leu Gly Val Lys Thr Ala His Lys Leu Ser Ser Ala Lys Leu  
165 170 175

Lys Lys Ser Phe Gly Ile Met Leu Leu Leu Ile Ala Gly Lys Met Leu  
180 185 190

Tyr Asn Leu Leu  
195

<210> 87

<211> 806

<212> DNA

<213> Neisseria meningitidis

<400> 87

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gccggcctgt	tcggcgtagg	cggcggcacg	ctgattgtcc	ctgtcgtttt	atgggtgctt	120
gatttgcagg	gtttggcaca	acatccttac	gcgcaacacc	tcgccgtcgg	cacatccttc	180
gccgtcatgg	tcttcaccgc	cttttcaggt	atgctggggc	agcacaaaaa	acaggcggtc	240
gactggaaaa	ccgtatttac	gatgatgccg	ggtatgatat	tcggcggtatt	cacggggcgca	300
ctctccgcaa	aatatatccc	cgcgttcggg	cttcaaattt	tcttcaccc	gtttttaacc	360
gccgtcgcat	tcaaaacact	gcataccgac	cctcagacgg	catccccgcc	gctgccccga	420

ctgcccggac	tgactgcggt	ttccacactg	ttcggcacaa	tgctcgagctg	ggtcgggcata	480
ggcggcggtt	cactttccgt	cccccttcta	atccactgcg	gcttccccgc	ccataaagcc	540
atcggcacat	catccggcct	tgccctggccg	attgcactct	ccggcgcaat	atcgtatctg	600
ctcaacggcc	tgaatattgc	aggattgccc	gaagggtcac	tgggcttcct	ttacctgccc	660
gccgtcgccg	tcctcagcgc	ggcaaccatt	gcctttgccc	cgctcggtgt	caaaaccgcc	720
cacaaacttt	cttctgccaa	actcaaaaaa	tcttcggcat	tatgttgctt	ttgattgccg	780
gaaaaatgct	gtacaacctg	ctttaa				806

<210> 88  
 <211> 268  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (251)..(251)  
 <223> Xaa= any amino acid

<400> 88  
 Met Trp His Trp Asp Ile Ile Leu Ile Leu Leu Ala Val Gly Ser Ala  
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 Ala Gly Phe Ile Ala Gly Leu Phe Gly Val Gly Gly Gly Thr Leu Ile  
 20 25 30  
 Val Pro Val Val Leu Trp Val Leu Asp Leu Gln Gly Leu Ala Gln His  
 35 40 45  
 Pro Tyr Ala Gln His Leu Ala Val Gly Thr Ser Phe Ala Val Met Val  
 50 55 60  
 Phe Thr Ala Phe Ser Ser Met Leu Gly Gln His Lys Lys Gln Ala Val  
 65 70 75 80  
 Asp Trp Lys Thr Val Phe Thr Met Met Pro Gly Met Ile Phe Gly Val  
 85 90 95  
 Phe Thr Gly Ala Leu Ser Ala Lys Tyr Ile Pro Ala Phe Gly Leu Gln  
 100 105 110  
 Ile Phe Phe Ile Leu Phe Leu Thr Ala Val Ala Phe Lys Thr Leu His  
 115 120 125  
 Thr Asp Pro Gln Thr Ala Ser Arg Pro Leu Pro Gly Leu Pro Gly Leu  
 130 135 140  
 Thr Ala Val Ser Thr Leu Phe Gly Thr Met Ser Ser Trp Val Gly Ile  
 145 150 155 160  
 Gly Gly Gly Ser Leu Ser Val Pro Phe Leu Ile His Cys Gly Phe Pro  
 165 170 175  
 Ala His Lys Ala Ile Gly Thr Ser Ser Gly Leu Ala Trp Pro Ile Ala  
 180 185 190  
 Leu Ser Gly Ala Ile Ser Tyr Leu Leu Asn Gly Leu Asn Ile Ala Gly



195

200

205

Leu Pro Glu Gly Ser Leu Gly Phe Leu Tyr Leu Pro Ala Val Ala Val  
210 215 220

Leu Ser Ala Ala Thr Ile Ala Phe Ala Pro Leu Gly Val Lys Thr Ala  
225 230 235 240

His Lys Leu Ser Ser Ala Lys Leu Lys Lys Xaa Phe Gly Ile Met Leu  
245 250 255

Leu Leu Ile Ala Gly Lys Met Leu Tyr Asn Leu Leu  
260 265

&lt;210&gt; 89

&lt;211&gt; 807

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 89

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gccggcctgt	tcggcgtagg	cggcggcacg	ctgattgtcc	ctgtcgtttt	atgggtgctt	120
gatttgcagg	gtttggcaca	acatccttac	gcgcaacacc	tcggcgtcgg	cacatccttc	180
gccgtcatgg	tcttcaccgc	cttttccagt	atgctggggc	agcacaaaaa	acaggcggtc	240
gactggaaaa	ccgtattttac	gatgatgccg	ggatggtat	tcggcggtatt	cgctggcgca	300
ctctccgcaa	aatatatccc	agcggtcggg	cttcaaattt	tcttcatcct	gtttttaacc	360
gccgtcgcac	tcaaaacact	gcataccgac	cctcagacgg	catcccgccc	gctgcccgga	420
ctgcccggac	tgactgcggt	ttccacactg	ttcggcacia	tgctcgagctg	ggtcggcata	480
ggcggcggtt	cactttccgt	ccccttctta	atccactgcg	gcttccccgc	ccataaagcc	540
atcggcacat	catccggcct	tgccctggcg	attgcaactc	ccggcgcaat	atcgatatctg	600
ctcaacggcc	tgaatattgc	aggattgccc	gaagggtcac	tgggcttctt	ttacctgccc	660
gccgtcgccg	tcctcagcgc	ggcaaccatt	gcctttgccc	cgctcggtgt	caaaaccgcc	720
cacaaacttt	cttctgccaa	actcaaaaaa	tccttcggca	ttatgttgct	tttgattgcc	780
ggaaaaatgc	tgtacaacct	gctttaa				807

&lt;210&gt; 90

&lt;211&gt; 268

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 90

Met Trp His Trp Asp Ile Ile Leu Ile Leu Leu Ala Val Gly Ser Ala  
1 5 10 15

Ala Gly Phe Ile Ala Gly Leu Phe Gly Val Gly Gly Gly Thr Leu Ile  
20 25 30

Val Pro Val Val Leu Trp Val Leu Asp Leu Gln Gly Leu Ala Gln His  
35 40 45

Pro Tyr Ala Gln His Leu Ala Val Gly Thr Ser Phe Ala Val Met Val  
50 55 60

Phe Thr Ala Phe Ser Ser Met Leu Gly Gln His Lys Lys Gln Ala Val  
65 70 75 80

Asp Trp Lys Thr Val Phe Thr Met Met Pro Gly Met Val Phe Gly Val  
                     85                    90                    95  
 Phe Ala Gly Ala Leu Ser Ala Lys Tyr Ile Pro Ala Phe Gly Leu Gln  
                     100                    105                    110  
 Ile Phe Phe Ile Leu Phe Leu Thr Ala Val Ala Phe Lys Thr Leu His  
                     115                    120                    125  
 Thr Asp Pro Gln Thr Ala Ser Arg Pro Leu Pro Gly Leu Pro Gly Leu  
                     130                    135                    140  
 Thr Ala Val Ser Thr Leu Phe Gly Thr Met Ser Ser Trp Val Gly Ile  
                     145                    150                    155                    160  
 Gly Gly Gly Ser Leu Ser Val Pro Phe Leu Ile His Cys Gly Phe Pro  
                     165                    170                    175  
 Ala His Lys Ala Ile Gly Thr Ser Ser Gly Leu Ala Trp Pro Ile Ala  
                     180                    185                    190  
 Leu Ser Gly Ala Ile Ser Tyr Leu Leu Asn Gly Leu Asn Ile Ala Gly  
                     195                    200                    205  
 Leu Pro Glu Gly Ser Leu Gly Phe Leu Tyr Leu Pro Ala Val Ala Val  
                     210                    215                    220  
 Leu Ser Ala Ala Thr Ile Ala Phe Ala Pro Leu Gly Val Lys Thr Ala  
                     225                    230                    235                    240  
 His Lys Leu Ser Ser Ala Lys Leu Lys Lys Ser Phe Gly Ile Met Leu  
                     245                    250                    255  
 Leu Leu Ile Ala Gly Lys Met Leu Tyr Asn Leu Leu  
                     260                    265

<210> 91  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 91  
 nnnnnnnn

<210> 92  
 <211> 268  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 92  
 Met Trp His Trp Asp Ile Ile Leu Ile Leu Leu Ala Val Gly Ser Ala

1	5	10	15
Ala Gly Phe	Ile Ala Gly Leu Phe	Gly Val Gly Gly Gly	Thr Leu Ile
20		25	30
Val Pro Val	Val Leu Trp Val Leu	Asp Leu Gln Gly	Leu Ala Gln His
35		40	45
Pro Tyr Ala	Gln His Leu Ala Val	Gly Thr Ser Phe	Ala Val Met Val
50		55	60
Phe Thr Ala	Phe Ser Ser Met Leu	Gly Gln His Lys	Lys Gln Ala Val
65		70	75
Asp Trp Lys	Thr Ile Phe Ala Met	Met Pro Gly Met	Ile Phe Gly Val
	85	90	95
Phe Ala Gly	Ala Leu Ser Ala Lys	Tyr Ile Pro Ala	Phe Gly Leu Gln
	100	105	110
Ile Phe Phe	Ile Leu Phe Leu Thr	Ala Val Ala Phe	Lys Thr Leu His
	115	120	125
Thr Gly Arg	Gln Thr Ala Ser Arg	Pro Leu Pro Gly	Leu Pro Gly Leu
	130	135	140
Thr Ala Val	Ser Thr Leu Phe Gly	Ala Met Ser Ser	Trp Val Gly Ile
	145	150	155
Gly Gly Gly	Ser Leu Ser Val Pro	Phe Leu Ile His	Cys Gly Phe Pro
	165	170	175
Ala His Lys	Ala Ile Gly Thr Ser	Ser Gly Leu Ala	Trp Pro Ile Ala
	180	185	190
Leu Ser Gly	Ala Ile Ser Tyr Leu	Val Asn Gly Leu	Asn Ile Ala Gly
	195	200	205
Leu Pro Glu	Gly Ser Leu Gly Phe	Leu Tyr Leu Pro	Ala Val Ala Val
	210	215	220
Leu Ser Ala	Ala Thr Ile Ala Phe	Ala Pro Leu Gly	Val Lys Thr Ala
	225	230	235
His Lys Leu	Ser Ser Ala Lys Leu	Lys Glu Ser Phe	Gly Ile Met Leu
	245	250	255
Leu Leu Ile	Ala Gly Lys Met Leu	Tyr Asn Leu Leu	
	260	265	

<210> 93  
 <211> 807  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*  
 <400> 93

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gccggcctgt	tcgggtgtagg	cggcggtacg	ctgattgtcc	ctgtcgtttt	atgggtgctt	120
gatttgcagg	gtttggcaca	acatccttac	gcgcaacacc	tcgccgtcgg	cacatccttc	180
gccgtcatgg	tcttcaccgc	cttttccagt	atgttggggc	agcacaaaaa	acaggcggtc	240
gactggaaaa	ccatatattgc	gatgatgccg	ggtatgatat	tcggcgtatt	cgctggcgca	300
ctctccgcaa	aatatatccc	cgcgttcggg	cttcaaattt	tcttcatcct	gtttttaacc	360
gccgtcgcac	tcaaaacact	gcataccggg	cgtcagacgg	catcccggcc	gctgcccggg	420
ctgcccggac	tgactgcggg	ttccacactg	ttcggcgcaa	tgtcgagctg	ggtcggcata	480
ggcggcggtt	cactttccgt	ccccttctta	atccactgcg	gcttccccgc	ccataaagcc	540
atcggcacat	catccggcct	tgcttgccg	attgcactct	ccggcgcaat	atcgtatctg	600
gtcaacgggc	tgaatattgc	aggattggcc	gaagggtcgc	tgggcttcct	ttacctgccc	660
gccgtcgcgc	tcctcagcgc	ggcaaccatt	gcctttgccc	cgctcgggtg	caaaaccgcc	720
cacaaacttt	cttctgccaa	actcaaagaa	tccttcggca	ttatgttgct	tttgattgcc	780
ggaaaaatgc	tgtacaacct	gctttaa				807

<210> 94

<211> 268

<212> PRT

<213> Neisseria gonorrhoeae

<400> 94

Met	Trp	His	Trp	Asp	Ile	Ile	Leu	Ile	Leu	Leu	Ala	Val	Gly	Ser	Ala
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Ala	Gly	Phe	Ile	Ala	Gly	Leu	Phe	Gly	Val	Gly	Gly	Gly	Thr	Leu	Ile
			20					25					30		

Val	Pro	Val	Val	Leu	Trp	Val	Leu	Asp	Leu	Gln	Gly	Leu	Ala	Gln	His
		35					40					45			

Pro	Tyr	Ala	Gln	His	Leu	Ala	Val	Gly	Thr	Ser	Phe	Ala	Val	Met	Val
	50					55					60				

Phe	Thr	Ala	Phe	Ser	Ser	Met	Leu	Gly	Gln	His	Lys	Lys	Gln	Ala	Val
65					70					75				80	

Asp	Trp	Lys	Thr	Ile	Phe	Ala	Met	Met	Pro	Gly	Met	Ile	Phe	Gly	Val
			85						90					95	

Phe	Ala	Gly	Ala	Leu	Ser	Ala	Lys	Tyr	Ile	Pro	Ala	Phe	Gly	Leu	Gln
		100						105					110		

Ile	Phe	Phe	Ile	Leu	Phe	Leu	Thr	Ala	Val	Ala	Phe	Lys	Thr	Leu	His
		115					120					125			

Thr	Gly	Arg	Gln	Thr	Ala	Ser	Arg	Pro	Leu	Pro	Gly	Leu	Pro	Gly	Leu
	130					135					140				

Thr	Ala	Val	Ser	Thr	Leu	Phe	Gly	Ala	Met	Ser	Ser	Trp	Val	Gly	Ile
145					150					155					160

Gly	Gly	Gly	Ser	Leu	Ser	Val	Pro	Phe	Leu	Ile	His	Cys	Gly	Phe	Pro
			165						170					175	

Ala	His	Lys	Ala	Ile	Gly	Thr	Ser	Ser	Gly	Leu	Ala	Trp	Pro	Ile	Ala
		180						185					190		

Leu Ser Gly Ala Ile Ser Tyr Leu Val Asn Gly Leu Asn Ile Ala Gly  
 195 200 205

Leu Pro Glu Gly Ser Leu Gly Phe Leu Tyr Leu Pro Ala Val Ala Val  
 210 215 220

Leu Ser Ala Ala Thr Ile Ala Phe Ala Pro Leu Gly Val Lys Thr Ala  
 225 230 235 240

His Lys Leu Ser Ser Ala Lys Leu Lys Glu Ser Phe Gly Ile Met Leu  
 245 250 255

Leu Leu Ile Ala Gly Lys Met Leu Tyr Asn Leu Leu  
 260 265

<210> 95

<211> 351

<212> DNA

<213> Neisseria meningitidis

<400> 95

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acggttcaag	tgtttggtgt	tgccggcactg	ctcaaacttt	atgcgctgaa	gccggtttat	180
tggttcgtgt	tgcaagttgt	gctgatggcg	gttgcctatg	tcacccgctg	cggtatagac	240
cggcagccgc	cgtaacggt	cggcggctcg	cagctgcgac	tcggcgggtt	gacggcagcg	300
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<210> 96

<211> 116

<212> PRT

<213> Neisseria meningitidis

<400> 96

Gly Asn Gly Trp Gln Ala Asp Pro Glu His Pro Leu Leu Gly Leu Phe  
 1 5 10 15

Ala Val Ser Asn Val Ser Met Thr Leu Ala Phe Val Gly Ile Cys Ala  
 20 25 30

Leu Val His Tyr Cys Phe Ser Gly Thr Val Gln Val Phe Val Phe Ala  
 35 40 45

Ala Leu Leu Lys Leu Tyr Ala Leu Lys Pro Val Tyr Trp Phe Val Leu  
 50 55 60

Gln Phe Val Leu Met Ala Val Ala Tyr Val His Arg Cys Gly Ile Asp  
 65 70 75 80

Arg Gln Pro Pro Ser Thr Phe Gly Gly Ser Gln Leu Arg Leu Gly Gly  
 85 90 95

Leu Thr Ala Ala Leu Met Gln Val Ser Val Leu Val Leu Leu Leu Ser  
 100 105 110

Glu Ile Gly Arg

<210> 97  
 <211> 606  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 97  
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 atatcggttt tgggggcaaa gctgatgcc ggcatatggg gaatgaccgc cgccgcgccc 180  
 ttgttcatcc cccattttta cctgactttg ggcagcatat tttttttcat cgggcattgg 240  
 aaccggaaaa cagatggaaa cggatggcag gcagacccgc aacatccgct gtcgggctt 300  
 tttgccgtca gtaatgtatc gatgacgctt gcttttgcg gaatatgtgc gttggtgcat 360  
 tattgctttt cgggaacggt tcaagtgttt gtgtttgcg cactgctcaa actttatgcg 420  
 ctgaagccgg tttattggtt cgtgttgag tttgtgctga tggcggttgc ctatgtccac 480  
 cgctgcggta tagaccggca gccgccgtca acgttcggcg gctcgcagct gcgactcggc 540  
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 agataa 606

<210> 98  
 <211> 201  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 98  
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 Val Phe Leu Phe Leu Ile Phe Arg Ala Gly Met Leu Gln Trp Phe Trp  
 20 25 30  
 Ala Ser Ile Met Leu Trp Leu Gly Ile Ser Val Leu Gly Ala Lys Leu  
 35 40 45  
 Met Pro Gly Ile Trp Gly Met Thr Arg Ala Ala Pro Leu Phe Ile Pro  
 50 55 60  
 His Phe Tyr Leu Thr Leu Gly Ser Ile Phe Phe Phe Ile Gly His Trp  
 65 70 75 80  
 Asn Arg Lys Thr Asp Gly Asn Gly Trp Gln Ala Asp Pro Glu His Pro  
 85 90 95  
 Leu Leu Gly Leu Phe Ala Val Ser Asn Val Ser Met Thr Leu Ala Phe  
 100 105 110  
 Val Gly Ile Cys Ala Leu Val His Tyr Cys Phe Ser Gly Thr Val Gln  
 115 120 125  
 Val Phe Val Phe Ala Ala Leu Leu Lys Leu Tyr Ala Leu Lys Pro Val  
 130 135 140  
 Tyr Trp Phe Val Leu Gln Phe Val Leu Met Ala Val Ala Tyr Val His  
 145 150 155 160

Arg Cys Gly Ile Asp Arg Gln Pro Pro Ser Thr Phe Gly Gly Ser Gln  
165 170 175

Leu Arg Leu Gly Gly Leu Thr Ala Ala Leu Met Gln Val Ser Val Leu  
180 185 190

Val Leu Leu Leu Ser Glu Ile Gly Arg  
195 200

<210> 99  
<211> 606  
<212> DNA  
<213> Neisseria meningitidis

<220>  
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<223> N= Unknown

<220>  
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<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (565)..(565)  
<223> N= Unknown

<400> 99  
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atatcggttt tgggggcaaa gctgatgccc ggcataatggg gaatgaccgc cgccgcgcc 180  
ttgttcatcc cccattttta cctgactttg ggcagcatat tttttttcat cgggcattgg 240  
aaccggaaaa cggatggaaa cggatggcag gcagaccccg aacatcctct gctcgggctg 300  
tttgccgtca gtaatgtatc gatgacgctt gcttttgcg gaatatgtgc gttggtgcat 360  
tattgctttt cgngaacggg tcaagtgttt gtgtttgcg cactgctcaa actttatgcg 420  
ctgaagccgg tttattggtt cgtgttgcat tttgtgctga tggcggttgc ctatgtccac 480  
cgctgcggta tagaccggca gccgccgtca acgttcggcg gntcgcagct gcgactcggc 540  
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agataa 606

<210> 100  
<211> 201  
<212> PRT  
<213> Neisseria meningitidis

<220>  
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<222> (125)..(125)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (189)..(189)  
<223> N= Unknown

<400> 100

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Val Phe Leu Phe Leu Ile Phe Arg Ala Gly Met Leu Gln Trp Phe Trp  
20 25 30

Ala Ser Ile Met Leu Trp Leu Gly Ile Ser Val Leu Gly Ala Lys Leu  
35 40 45

Met Pro Gly Ile Trp Gly Met Thr Arg Ala Ala Pro Leu Phe Ile Pro  
50 55 60

His Phe Tyr Leu Thr Leu Gly Ser Ile Phe Phe Phe Ile Gly His Trp  
65 70 75 80

Asn Arg Lys Thr Asp Gly Asn Gly Trp Gln Ala Asp Pro Glu His Pro  
85 90 95

Leu Leu Gly Leu Phe Ala Val Ser Asn Val Ser Met Thr Leu Ala Phe  
100 105 110

Val Gly Ile Cys Ala Leu Val His Tyr Cys Phe Ser Xaa Thr Val Gln  
115 120 125

Val Phe Val Phe Ala Ala Leu Leu Lys Leu Tyr Ala Leu Lys Pro Val  
130 135 140

Tyr Trp Phe Val Leu Gln Phe Val Leu Met Ala Val Ala Tyr Val His  
145 150 155 160

Arg Cys Gly Ile Asp Arg Gln Pro Pro Ser Thr Phe Gly Gly Ser Gln  
165 170 175

Leu Arg Leu Gly Gly Leu Thr Ala Ala Leu Met Gln Xaa Ser Val Leu  
180 185 190

Val Leu Leu Leu Ser Glu Ile Gly Arg  
195 200

<210> 101

<211> 606

<212> DNA

<213> *Neisseria gonorrhoeae*

<220>

<221> misc\_feature

<222> (125)..(125)

<223> N= Unknown

<220>

<221> misc\_feature

<222> (189)..(189)

<223> N= Unknown

<400> 101



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atctcggttt	taggggtaaa	gctgatgccg	gggatgtggg	gaatgaccgc	cgccgcgcct	180
ttgttcatcc	cccatTTTTa	cctgactttg	ggcagcatat	tttttttcat	cggggtattgg	240
aaccggaaaa	cagatggaaa	cggatggcag	gcagaccccg	aacatccgct	gctcgggctt	300
tttgccgtca	gtaatgtatc	gatgacgctt	gcttttgcgc	gaatatgtgc	gttggtgcat	360
tattgctttt	cggaacgggt	tcaagtgttt	gtgtttgcgc	cattgctcaa	actttatgcg	420
ctgaagccgg	tttattgggt	cgtgttgcag	tttgatttga	tggcggttgc	ctatgtccac	480
cgctgcggta	tagaccggca	gccgccgtca	acgttcggcg	gttcgcagct	gcgaactcggc	540
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<210> 102  
 <211> 201  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 102  
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 Val Phe Leu Phe Leu Ile Phe Arg Ala Gly Met Leu Gln Trp Phe Trp  
 20 25 30  
 Ala Ser Ile Ala Leu Trp Leu Gly Ile Ser Val Leu Gly Val Lys Leu  
 35 40 45  
 Met Pro Gly Met Trp Gly Met Thr Arg Ala Ala Pro Leu Phe Ile Pro  
 50 55 60  
 His Phe Tyr Leu Thr Leu Gly Ser Ile Phe Phe Phe Ile Gly Tyr Trp  
 65 70 75 80  
 Asn Arg Lys Thr Asp Gly Asn Gly Trp Gln Ala Asp Pro Glu His Pro  
 85 90 95  
 Leu Leu Gly Leu Phe Ala Val Ser Asn Val Ser Met Thr Leu Ala Phe  
 100 105 110  
 Val Gly Ile Cys Ala Leu Val His Tyr Cys Phe Ser Gly Thr Val Gln  
 115 120 125  
 Val Phe Val Phe Ala Ala Leu Leu Lys Leu Tyr Ala Leu Lys Pro Val  
 130 135 140  
 Tyr Trp Phe Val Leu Gln Phe Val Leu Met Ala Val Ala Tyr Val His  
 145 150 155 160  
 Arg Cys Gly Ile Asp Arg Gln Pro Pro Ser Thr Phe Gly Gly Ser Gln  
 165 170 175  
 Leu Arg Leu Gly Val Leu Ala Ala Met Leu Met Gln Val Ala Val Thr  
 180 185 190  
 Ala Met Leu Leu Ala Glu Ile Gly Arg  
 195 200

<210> 103  
<211> 308  
<212> DNA  
<213> *Neisseria gonorrhoeae*

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<223> N= Unknown

<220>  
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<223> N= Unknown

<220>  
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<223> N= Unknown

<220>  
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<220>  
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<222> (306)..(306)  
<223> N= Unknown

<400> 103  
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tttaccgccg cctccatcgt ctggcagcta ggcgaaacca agctcgccat gcccttcgta 120  
ctcggcatca tcgccggcgg ccttgctgat ttggacaacc ncntgaccgg acggctnaaa 180  
aacatcatca ccaccgtcgc cctgttcacc ctctcctcgc tcacggcaca aagcaccctc 240  
ggcacaggcg tgcccttcac cctcgccatg accctgatga cttcgcttca ccattttagg 300  
cgcggnccg 308

<210> 104  
<211> 103  
<212> PRT  
<213> *Neisseria meningitidis*

<220>  
<221> misc\_feature  
<222> (54)..(55)  
<223> Xaa= any amino acid

<220>  
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<222> (95)..(96)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (103)..(103)

<223> Xaa= any amino acid

<400> 104

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Phe Ala Ser Val Phe Thr Ala Ala Ser Ile Val Trp Gln Leu Gly Glu  
20 25 30

Pro Lys Leu Ala Met Pro Phe Val Leu Gly Ile Ile Ala Gly Gly Leu  
35 40 45

Val Asp Leu Asp Asn Xaa Xaa Thr Gly Arg Leu Lys Asn Ile Ile Thr  
50 55 60

Thr Val Ala Leu Phe Thr Leu Ser Ser Leu Thr Ala Gln Ser Thr Leu  
65 70 75 80

Gly Thr Gly Leu Pro Phe Ile Leu Ala Met Thr Leu Met Thr Xaa Xaa  
85 90 95

Phe Thr Ile Leu Gly Ala Xaa  
100

<210> 105

<211> 2151

<212> DNA

<213> *Neisseria meningitidis*

<400> 105

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ctcggcatca	tcgccggcgg	ccttgctgat	ttggacaacc	gcctgaccgg	acggctgaaa	180
aacatcatca	ccaccgtcgc	cctgttcacc	ctctcctcgc	tcacggcaca	aagcaccctc	240
ggcacagggc	tgcccttcat	cctcgccatg	accctgatga	ccttcggcct	caccatttta	300
ggcgcggtcg	ggctcaaata	ccgcaccttc	gccttcgggtg	cactcgccgt	cgccacctac	360
accacactta	cctacacccc	cgaaacctac	tggttgacca	accccttcat	gattttatgc	420
ggcaccgtac	tgtacagcac	cgccatcctc	ctgttccaaa	tcgtcctgcc	ccaccgcccc	480
gtccaagaaa	gcgtcgccaa	cgccatcgac	gcactcggcg	gtacactcga	agccaaagcc	540
gactttcttcg	accccgatga	ggcagcctgg	ataggcaacc	gccacatcga	cctcgccatg	600
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cgcgggcaaac	accgccaccc	gcgcaccgcc	aaaatgctgc	gttactactt	tgccgcccac	720
gacatacacg	aacgcatcag	ctccgcccac	gtcgattatc	aggaaatgtc	cgaaaaattc	780
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cgcaacaccg	cccaagccct	gcgcgcaagc	aaagactacg	tttacagcaa	acgcctcggc	900
cgcgccatcg	aaggctgccc	ccaatcgctg	cgctcctttt	cagacagcaa	cgacagtccc	960
gacatccgcc	acctgcgcgc	ccttctcgac	aacctcggca	gcgtcgacca	gcagttccgc	1020
caactccagc	acaacggcct	gcaggcagaa	aacgaccgca	tgggcgacac	ccgcatcgcc	1080
gccctcgaaa	ccagcagcct	caaaaacacc	tggcaggcaa	tcggtccgca	gctaaacctc	1140
gaatcaggcg	tattccgcca	tgccgtccgc	ctgtccctcg	tcgttgccgc	cgctgcacc	1200
atcgtcgaag	ccctcaacct	caacctcggc	tactggatac	tactgaccgc	ccttttcgtc	1260
tgccaaccca	actacaccgc	caccaaagc	cgcgtccgcc	agcgcacgc	cggcaccgta	1320
ctcggcgtaa	tcgtcggctc	gctcgtcccc	tacttcaccc	cgtctgtcga	aaccaaactc	1380
tggattgtca	tcgccagtac	caccctcttt	ttcatgaccc	gcacctacaa	atacagtttc	1440
tccaccttct	tcattaccat	tcaagccctg	accagcctct	ccctcgcagg	tttggacgta	1500
tacgccgcca	tgcccgtacg	catcatcgac	accattatcg	gcgcacccct	tgccctgggcg	1560

gcagtcagct	acctgtggcc	agactggaaa	tacctcacgc	tcgaacgcac	cgccgccctt	1620
gccgtatgca	gcaacgggtgc	ctatctcgaa	aaaatcaccg	aacgcctcaa	aagcggcgaa	1680
accggcgacg	acgtcgaata	ccgcgccacc	cgccgcgcg	cccacgaaca	caccgccgcc	1740
ctcagcagca	ccctttccga	catgagcagc	gaacccgcaa	aattcgccga	cagcctgcaa	1800
cccggcttta	ccctgtctca	aaccggctac	gccctgaccg	gctacatctc	cgccctcggc	1860
gcataccgca	gcgaaatgca	cgaagaatgc	agccccgact	ttaccgcaca	gttccacctc	1920
gccgccgaac	acaccgcccc	catcttccaa	cacctgcccc	aaaccgaacc	cgacgacttt	1980
cagacagcac	tggatacact	gcgcggcgaa	ctcgacaccc	tccgcaccca	cagcagcgga	2040
acacaaagcc	acatctctct	ccaacagctc	caactcatcg	cccagacagct	cgaaccctac	2100
taccgcgcct	accgccaaat	tccgcacagg	cagccccaaa	atgcagcctg	a	2151

<210> 106  
 <211> 716  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 106  
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 Pro Lys Leu Ala Met Pro Phe Val Leu Gly Ile Ile Ala Gly Gly Leu  
 35 40 45  
 Val Asp Leu Asp Asn Arg Leu Thr Gly Arg Leu Lys Asn Ile Ile Thr  
 50 55 60  
 Thr Val Ala Leu Phe Thr Leu Ser Ser Leu Thr Ala Gln Ser Thr Leu  
 65 70 75 80  
 Gly Thr Gly Leu Pro Phe Ile Leu Ala Met Thr Leu Met Thr Phe Gly  
 85 90 95  
 Phe Thr Ile Leu Gly Ala Val Gly Leu Lys Tyr Arg Thr Phe Ala Phe  
 100 105 110  
 Gly Ala Leu Ala Val Ala Thr Tyr Thr Thr Leu Thr Tyr Thr Pro Glu  
 115 120 125  
 Thr Tyr Trp Leu Thr Asn Pro Phe Met Ile Leu Cys Gly Thr Val Leu  
 130 135 140  
 Tyr Ser Thr Ala Ile Leu Leu Phe Gln Ile Val Leu Pro His Arg Pro  
 145 150 155 160  
 Val Gln Glu Ser Val Ala Asn Ala Tyr Asp Ala Leu Gly Gly Tyr Leu  
 165 170 175  
 Glu Ala Lys Ala Asp Phe Phe Asp Pro Asp Glu Ala Ala Trp Ile Gly  
 180 185 190  
 Asn Arg His Ile Asp Leu Ala Met Ser Asn Thr Gly Val Ile Thr Ala  
 195 200 205

Phe	Asn	Gln	Cys	Arg	Ser	Ala	Leu	Phe	Tyr	Arg	Leu	Arg	Gly	Lys	His	210	215	220
Arg	His	Pro	Arg	Thr	Ala	Lys	Met	Leu	Arg	Tyr	Tyr	Phe	Ala	Ala	Gln	225	230	235 240
Asp	Ile	His	Glu	Arg	Ile	Ser	Ser	Ala	His	Val	Asp	Tyr	Gln	Glu	Met	245	250	255
Ser	Glu	Lys	Phe	Lys	Asn	Thr	Asp	Ile	Ile	Phe	Arg	Ile	His	Arg	Leu	260	265	270
Leu	Glu	Met	Gln	Gly	Gln	Ala	Cys	Arg	Asn	Thr	Ala	Gln	Ala	Leu	Arg	275	280	285
Ala	Ser	Lys	Asp	Tyr	Val	Tyr	Ser	Lys	Arg	Leu	Gly	Arg	Ala	Ile	Glu	290	295	300
Gly	Cys	Arg	Gln	Ser	Leu	Arg	Leu	Leu	Ser	Asp	Ser	Asn	Asp	Ser	Pro	305	310	315 320
Asp	Ile	Arg	His	Leu	Arg	Arg	Leu	Leu	Asp	Asn	Leu	Gly	Ser	Val	Asp	325	330	335
Gln	Gln	Phe	Arg	Gln	Leu	Gln	His	Asn	Gly	Leu	Gln	Ala	Glu	Asn	Asp	340	345	350
Arg	Met	Gly	Asp	Thr	Arg	Ile	Ala	Ala	Leu	Glu	Thr	Ser	Ser	Leu	Lys	355	360	365
Asn	Thr	Trp	Gln	Ala	Ile	Arg	Pro	Gln	Leu	Asn	Leu	Glu	Ser	Gly	Val	370	375	380
Phe	Arg	His	Ala	Val	Arg	Leu	Ser	Leu	Val	Val	Ala	Ala	Ala	Cys	Thr	385	390	395 400
Ile	Val	Glu	Ala	Leu	Asn	Leu	Asn	Leu	Gly	Tyr	Trp	Ile	Leu	Leu	Thr	405	410	415
Ala	Leu	Phe	Val	Cys	Gln	Pro	Asn	Tyr	Thr	Ala	Thr	Lys	Ser	Arg	Val	420	425	430
Arg	Gln	Arg	Ile	Ala	Gly	Thr	Val	Leu	Gly	Val	Ile	Val	Gly	Ser	Leu	435	440	445
Val	Pro	Tyr	Phe	Thr	Pro	Ser	Val	Glu	Thr	Lys	Leu	Trp	Ile	Val	Ile	450	455	460
Ala	Ser	Thr	Thr	Leu	Phe	Phe	Met	Thr	Arg	Thr	Tyr	Lys	Tyr	Ser	Phe	465	470	475 480
Ser	Thr	Phe	Phe	Ile	Thr	Ile	Gln	Ala	Leu	Thr	Ser	Leu	Ser	Leu	Ala	485	490	495
Gly	Leu	Asp	Val	Tyr	Ala	Ala	Met	Pro	Val	Arg	Ile	Ile	Asp	Thr	Ile	500	505	510

Ile Gly Ala Ser Leu Ala Trp Ala Ala Val Ser Tyr Leu Trp Pro Asp  
515 520 525

Trp Lys Tyr Leu Thr Leu Glu Arg Thr Ala Ala Leu Ala Val Cys Ser  
530 535 540

Asn Gly Ala Tyr Leu Glu Lys Ile Thr Glu Arg Leu Lys Ser Gly Glu  
545 550 555 560

Thr Gly Asp Asp Val Glu Tyr Arg Ala Thr Arg Arg Arg Ala His Glu  
565 570 575

His Thr Ala Ala Leu Ser Ser Thr Leu Ser Asp Met Ser Ser Glu Pro  
580 585 590

Ala Lys Phe Ala Asp Ser Leu Gln Pro Gly Phe Thr Leu Leu Lys Thr  
595 600 605

Gly Tyr Ala Leu Thr Gly Tyr Ile Ser Ala Leu Gly Ala Tyr Arg Ser  
610 615 620

Glu Met His Glu Glu Cys Ser Pro Asp Phe Thr Ala Gln Phe His Leu  
625 630 635 640

Ala Ala Glu His Thr Ala His Ile Phe Gln His Leu Pro Glu Thr Glu  
645 650 655

Pro Asp Asp Phe Gln Thr Ala Leu Asp Thr Leu Arg Gly Glu Leu Asp  
660 665 670

Thr Leu Arg Thr His Ser Ser Gly Thr Gln Ser His Ile Leu Leu Gln  
675 680 685

Gln Leu Gln Leu Ile Ala Arg Gln Leu Glu Pro Tyr Tyr Arg Ala Tyr  
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Arg Gln Ile Pro His Arg Gln Pro Gln Asn Ala Ala  
705 710 715

<210> 107  
<211> 2151  
<212> DNA  
<213> Neisseria meningitidis

<400> 107  
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ctcggcatca tcgctggcgg cctggctgat ttggacaacc gcctgaccgg acggctgaaa 180  
aacatcatcg ccaccgtcgc cctgttcacc ctctcctcac ttgtcgcgca aagcaccctc 240  
ggcacagggt tgccattcat cctcgccatg accctgatga ctttcggctt taccatcatg 300  
ggcgcggtcg ggctgaaata ccgcaccttc gccttcggcg cactcgccgt cgccacctac 360  
accacactta cctacacccc cgaaacctac tggctgacca acccctttat gattctgtgc 420  
ggaaccgtac tgtacagcac cgccatcatc ctgttccaaa tcctcctgcc ccaccgcccc 480  
gttcaagaaa acgtcgccaa cgccctacgaa gcactcggca gctacctcga agccaaagcc 540  
gaatttttctg atccccgacga agccgaatgg ataggcaacc gccacatcga cctcgccatg 600  
agcaacaccg gcgtcatcac cgcccttcaac caatgccgtt ccgccctgtt ttaccgcctt 660

cgcgggcaaac	accgccaccc	gcgcacccgc	aaaatgctgc	gctactactt	cgccgcccaa	720
gacatacacg	aacgcacag	ctccgcccac	gtcgactacc	aagagatgtc	cgaaaaattc	780
aaaaacaccg	acatcatctt	ccgcatccac	cgctgtctcg	aaatgcaggg	acaagcctgc	840
cgcaacaccg	cccaagccct	gcgcgcaagc	aaagactacg	tttacagcaa	acgcctcggc	900
cgcgccatcg	aaggctgccc	ccaatcgctg	cgctctcttt	cagacagcaa	cgacaatccc	960
gacatccgcc	acctgcgccc	ccttctcgac	aacctcggca	gcgtcgacca	gcagttccgc	1020
caactccagc	acaacggcct	gcaggcagaa	aacgaccgca	tgggcgacac	ccgcatcgcc	1080
gccctcgaaa	cggcagcct	caaaaacacc	tggcaggcaa	tccgtccgca	gctaaacctc	1140
gaatcaggcg	tattccgcc	tgccgtccgc	ctgtcccttg	tcgttgccgc	cgctgcacc	1200
atcgtcgaag	ccctcaacct	caacctcggc	tactggatac	tactgaccgc	ccttttcgtc	1260
tgccaaccca	actacaccgc	cacaaaaagc	cgcgctccgc	agcgcatcgc	cggcaccgta	1320
ctcggcgtaa	tcgtcggtc	gctcgtcccc	tactttaccc	cctccgtcga	aaccaaactc	1380
tggatcgta	tcgccagtac	cacctctttt	ttcatgacct	gcacctacaa	atacagcttc	1440
tcgacatttt	tcatcaccat	tcaagccctg	accagcctct	ccctcgcagg	gttggacgta	1500
tacgccgcca	tgcccgtagc	catcatcgac	accattatcg	gcgcattccct	tgcttgggcg	1560
gcagtcagct	acctgtggcc	agactggaaa	tacctcacgc	tcgaacgcac	cgccgccctt	1620
gccgtatgca	gcaacggcgc	ctatctcgaa	aaaatcaccg	aacgcctcaa	aagcggcgaa	1680
accggcgacg	acgtcgaata	ccgcgccacc	cgccgcgcgc	cccacgaaca	caccgccgcc	1740
ctcagcagca	ccctttccga	catgagcagc	gaaccgcgaa	aattcgccga	cagcctgcaa	1800
cccggcttta	ccctgtctaa	aaccggctac	gccctgaccg	gctacatctc	cgccctcggc	1860
gcataccgca	gcgaaatgca	cgaagaatgc	agccccgact	ttaccgcaca	gttccacctc	1920
gccgccgaac	acaccgcccc	catcttccaa	cacctgcccg	aaaccgaacc	cgacgacttt	1980
cagacagcac	tggatacact	gcgcggcgaa	ctcgacaccc	tccgcaccca	cagcagcgga	2040
acacaaagcc	acatcctcct	ccaacagctc	caactcatcg	cccggcagct	cgaaccctac	2100
taccgcgcct	accgacaaat	tccgcacagc	cagccccaaa	acgcagcctg	a	2151

<210> 108

<211> 716

<212> PRT

<213> Neisseria meningitidis

<400> 108

Met	Lys	Thr	Pro	Pro	Leu	Lys	Pro	Leu	Leu	Ile	Thr	Ser	Leu	Pro	Val
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Phe	Ala	Ser	Val	Phe	Thr	Ala	Ala	Ser	Ile	Val	Trp	Gln	Leu	Gly	Glu
			20					25					30		

Pro	Lys	Leu	Ala	Met	Pro	Phe	Val	Leu	Gly	Ile	Ile	Ala	Gly	Gly	Leu
		35					40					45			

Val	Asp	Leu	Asp	Asn	Arg	Leu	Thr	Gly	Arg	Leu	Lys	Asn	Ile	Ile	Ala
	50					55					60				

Thr	Val	Ala	Leu	Phe	Thr	Leu	Ser	Ser	Leu	Val	Ala	Gln	Ser	Thr	Leu
65					70					75					80

Gly	Thr	Gly	Leu	Pro	Phe	Ile	Leu	Ala	Met	Thr	Leu	Met	Thr	Phe	Gly
				85					90					95	

Phe	Thr	Ile	Met	Gly	Ala	Val	Gly	Leu	Lys	Tyr	Arg	Thr	Phe	Ala	Phe
			100					105					110		

Gly	Ala	Leu	Ala	Val	Ala	Thr	Tyr	Thr	Thr	Leu	Thr	Tyr	Thr	Pro	Glu
		115					120					125			

Thr	Tyr	Trp	Leu	Thr	Asn	Pro	Phe	Met	Ile	Leu	Cys	Gly	Thr	Val	Leu	130	135	140
Tyr	Ser	Thr	Ala	Ile	Ile	Leu	Phe	Gln	Ile	Ile	Leu	Pro	His	Arg	Pro	145	150	155
Val	Gln	Glu	Asn	Val	Ala	Asn	Ala	Tyr	Glu	Ala	Leu	Gly	Ser	Tyr	Leu	165	170	175
Glu	Ala	Lys	Ala	Asp	Phe	Phe	Asp	Pro	Asp	Glu	Ala	Glu	Trp	Ile	Gly	180	185	190
Asn	Arg	His	Ile	Asp	Leu	Ala	Met	Ser	Asn	Thr	Gly	Val	Ile	Thr	Ala	195	200	205
Phe	Asn	Gln	Cys	Arg	Ser	Ala	Leu	Phe	Tyr	Arg	Leu	Arg	Gly	Lys	His	210	215	220
Arg	His	Pro	Arg	Thr	Ala	Lys	Met	Leu	Arg	Tyr	Tyr	Phe	Ala	Ala	Gln	225	230	235
Asp	Ile	His	Glu	Arg	Ile	Ser	Ser	Ala	His	Val	Asp	Tyr	Gln	Glu	Met	245	250	255
Ser	Glu	Lys	Phe	Lys	Asn	Thr	Asp	Ile	Ile	Phe	Arg	Ile	His	Arg	Leu	260	265	270
Leu	Glu	Met	Gln	Gly	Gln	Ala	Cys	Arg	Asn	Thr	Ala	Gln	Ala	Leu	Arg	275	280	285
Ala	Ser	Lys	Asp	Tyr	Val	Tyr	Ser	Lys	Arg	Leu	Gly	Arg	Ala	Ile	Glu	290	295	300
Gly	Cys	Arg	Gln	Ser	Leu	Arg	Leu	Leu	Ser	Asp	Ser	Asn	Asp	Asn	Pro	305	310	315
Asp	Ile	Arg	His	Leu	Arg	Arg	Leu	Leu	Asp	Asn	Leu	Gly	Ser	Val	Asp	325	330	335
Gln	Gln	Phe	Arg	Gln	Leu	Gln	His	Asn	Gly	Leu	Gln	Ala	Glu	Asn	Asp	340	345	350
Arg	Met	Gly	Asp	Thr	Arg	Ile	Ala	Ala	Leu	Glu	Thr	Gly	Ser	Leu	Lys	355	360	365
Asn	Thr	Trp	Gln	Ala	Ile	Arg	Pro	Gln	Leu	Asn	Leu	Glu	Ser	Gly	Val	370	375	380
Phe	Arg	His	Ala	Val	Arg	Leu	Ser	Leu	Val	Val	Ala	Ala	Ala	Cys	Thr	385	390	395
Ile	Val	Glu	Ala	Leu	Asn	Leu	Asn	Leu	Gly	Tyr	Trp	Ile	Leu	Leu	Thr	405	410	415
Ala	Leu	Phe	Val	Cys	Gln	Pro	Asn	Tyr	Thr	Ala	Thr	Lys	Ser	Arg	Val	420	425	430





<212> DNA  
<213> Neisseria gonorrhoeae

<220>  
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<222> (1)..(8)  
<223> N= Unknown

<400> 109  
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8

<210> 110  
<211> 370  
<212> PRT  
<213> Neisseria meningitidis

<400> 110  
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Pro Lys Leu Ala Met Pro Phe Val Leu Gly Ile Ile Ala Gly Gly Leu  
35 40 45  
Val Asp Leu Asp Asn Arg Leu Thr Gly Arg Leu Lys Asn Ile Ile Ala  
50 55 60  
Thr Val Ala Leu Phe Thr Leu Ser Ser Leu Thr Ala Gln Ser Thr Leu  
65 70 75 80  
Gly Thr Gly Leu Pro Phe Ile Leu Ala Met Thr Leu Met Thr Phe Gly  
85 90 95  
Phe Thr Ile Leu Gly Ala Val Gly Leu Lys Tyr Arg Thr Phe Ala Phe  
100 105 110  
Gly Ala Leu Ala Val Ala Thr Tyr Thr Thr Leu Thr Tyr Thr Pro Glu  
115 120 125  
Thr Tyr Trp Leu Thr Asn Pro Phe Met Ile Leu Cys Gly Thr Val Leu  
130 135 140  
Tyr Ser Thr Ala Ile Ile Leu Phe Gln Ile Ile Leu Pro His Arg Pro  
145 150 155 160  
Val Gln Glu Ser Val Ala Asn Ala Tyr Glu Ala Leu Gly Gly Tyr Leu  
165 170 175  
Glu Ala Lys Ala Asp Phe Phe Asp Pro Asp Glu Ala Ala Trp Ile Gly  
180 185 190  
Asn Arg His Ile Asp Leu Ala Met Ser Asn Thr Gly Val Ile Thr Ala  
195 200 205

Phe Asn Gln Cys Arg Ser Ala Leu Phe Tyr Arg Leu Arg Gly Lys His  
 210 215 220

Arg His Pro Arg Thr Ala Lys Met Leu Arg Tyr Tyr Phe Ala Ala Gln  
 225 230 235 240

Asp Ile His Glu Arg Ile Ser Ser Ala His Val Asp Tyr Gln Glu Met  
 245 250 255

Ser Glu Lys Phe Lys Asn Thr Asp Ile Ile Phe Arg Ile Arg Arg Leu  
 260 265 270

Leu Glu Met Gln Gly Gln Ala Cys Arg Asn Thr Ala Gln Ala Ile Arg  
 275 280 285

Ser Gly Lys Asp Tyr Val Tyr Ser Lys Arg Leu Gly Arg Ala Ile Glu  
 290 295 300

Gly Cys Arg Gln Ser Leu Arg Leu Leu Ser Asp Gly Asn Asp Ser Pro  
 305 310 315 320

Asp Ile Arg His Leu Ser Arg Leu Leu Asp Asn Leu Gly Ser Val Asp  
 325 330 335

Gln Gln Phe Arg Gln Leu Arg His Ser Asp Ser Pro Ala Glu Asn Asp  
 340 345 350

Arg Met Gly Asp Thr Arg Ile Ala Ala Leu Glu Thr Gly Ser Phe Lys  
 355 360 365

Asn Thr  
 370

<210> 111

<211> 2151

<212> DNA

<213> Neisseria gonorrhoeae

<400> 111

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ctcggcatca	tcgccggcgg	cctggtcgat	ttggacaacc	gcctgaccgg	acggctgaaa	180
aacatcatcg	ccaccgtcgc	cctgtttacc	ctctcctcgc	tcacggcgca	aagcaccctc	240
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gtccaagaaa	gcgtcgccaa	tgctacgaa	gcactcggcg	gctacctcga	agccaaagcc	540
gacttcttcg	accccgatga	ggcagcctgg	ataggcaacc	gccacatcga	cctcgccatg	600
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cgcggaacac	accgccaccc	gcgcaccgcc	aaaatgctgc	gctactactt	cgccgccccaa	720
gacatccacg	aacgcacatc	ctccgcccac	gtcgactacc	aagagatgtc	cgaaaaattc	780
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cgcgccatcg	aaggctgccg	ccagtcgctg	cgctcctttt	cagacggcaa	cgacagtccc	960
gacatccgcc	acctgagccg	ccttctcgac	aacctcgcca	gcgtcgacca	gcagttccgc	1020

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cagacggcat	tggatacact	gcgcggcgaa	ctcggcaccc	tccgcacccg	cagcagcgga	2040
acacaaagcc	acatcctcct	ccaacagctc	caactcatcg	cccggcaact	cgaaccctac	2100
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<210> 112  
 <211> 716  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 112

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			20					25						30	
Pro	Lys	Leu	Ala	Met	Pro	Phe	Val	Leu	Gly	Ile	Ile	Ala	Gly	Gly	Leu
		35					40					45			
Val	Asp	Leu	Asp	Asn	Arg	Leu	Thr	Gly	Arg	Leu	Lys	Asn	Ile	Ile	Ala
	50					55					60				
Thr	Val	Ala	Leu	Phe	Thr	Leu	Ser	Ser	Leu	Thr	Ala	Gln	Ser	Thr	Leu
65					70					75					80
Gly	Thr	Gly	Leu	Pro	Phe	Ile	Leu	Ala	Met	Thr	Leu	Met	Thr	Phe	Gly
				85					90					95	
Phe	Thr	Ile	Leu	Gly	Ala	Val	Gly	Leu	Lys	Tyr	Arg	Thr	Phe	Ala	Phe
			100					105					110		
Gly	Ala	Leu	Ala	Val	Ala	Thr	Tyr	Thr	Thr	Leu	Thr	Tyr	Thr	Pro	Glu
		115						120					125		
Thr	Tyr	Trp	Leu	Thr	Asn	Pro	Phe	Met	Ile	Leu	Cys	Gly	Thr	Val	Leu
	130					135					140				
Tyr	Ser	Thr	Ala	Ile	Ile	Leu	Phe	Gln	Ile	Ile	Leu	Pro	His	Arg	Pro
145					150					155					160

Val	Gln	Glu	Ser	Val	Ala	Asn	Ala	Tyr	Glu	Ala	Leu	Gly	Gly	Tyr	Leu	165	170	175
Glu	Ala	Lys	Ala	Asp	Phe	Phe	Asp	Pro	Asp	Glu	Ala	Ala	Trp	Ile	Gly	180	185	190
Asn	Arg	His	Ile	Asp	Leu	Ala	Met	Ser	Asn	Thr	Gly	Val	Ile	Thr	Ala	195	200	205
Phe	Asn	Gln	Cys	Arg	Ser	Ala	Leu	Phe	Tyr	Arg	Leu	Arg	Gly	Lys	His	210	215	220
Arg	His	Pro	Arg	Thr	Ala	Lys	Met	Leu	Arg	Tyr	Tyr	Phe	Ala	Ala	Gln	225	230	235
Asp	Ile	His	Glu	Arg	Ile	Ser	Ser	Ala	His	Val	Asp	Tyr	Gln	Glu	Met	245	250	255
Ser	Glu	Lys	Phe	Lys	Asn	Thr	Asp	Ile	Ile	Phe	Arg	Ile	Arg	Arg	Leu	260	265	270
Leu	Glu	Met	Gln	Gly	Gln	Ala	Cys	Arg	Asn	Thr	Ala	Gln	Ala	Ile	Arg	275	280	285
Ser	Gly	Lys	Asp	Tyr	Val	Tyr	Ser	Lys	Arg	Leu	Gly	Arg	Ala	Ile	Glu	290	295	300
Gly	Cys	Arg	Gln	Ser	Leu	Arg	Leu	Leu	Ser	Asp	Gly	Asn	Asp	Ser	Pro	305	310	315
Asp	Ile	Arg	His	Leu	Ser	Arg	Leu	Leu	Asp	Asn	Leu	Gly	Ser	Val	Asp	325	330	335
Gln	Gln	Phe	Arg	Gln	Leu	Arg	His	Ser	Asp	Ser	Pro	Ala	Glu	Asn	Asp	340	345	350
Arg	Met	Gly	Asp	Thr	Arg	Ile	Ala	Ala	Leu	Glu	Thr	Gly	Ser	Phe	Lys	355	360	365
Asn	Thr	Trp	Gln	Ala	Ile	Arg	Pro	Gln	Leu	Asn	Leu	Glu	Ser	Cys	Val	370	375	380
Phe	Arg	His	Ala	Val	Arg	Leu	Ser	Leu	Val	Val	Ala	Ala	Ala	Cys	Thr	385	390	395
Ile	Val	Glu	Ala	Leu	Asn	Leu	Asn	Leu	Gly	Tyr	Trp	Ile	Leu	Leu	Thr	405	410	415
Ala	Leu	Phe	Val	Cys	Gln	Pro	Asn	Tyr	Thr	Ala	Thr	Lys	Ser	Arg	Val	420	425	430
Tyr	Gln	Arg	Ile	Ala	Gly	Thr	Val	Leu	Gly	Val	Ile	Val	Gly	Ser	Leu	435	440	445
Val	Pro	Tyr	Phe	Thr	Pro	Ser	Val	Glu	Thr	Lys	Leu	Trp	Ile	Val	Ile	450	455	460

Ala Gly Thr Thr Leu Phe Phe Met Thr Arg Thr Tyr Lys Tyr Ser Phe  
 465 470 475 480  
 Ser Thr Phe Phe Ile Thr Ile Gln Ala Leu Thr Ser Leu Ser Leu Ala  
 485 490 495  
 Gly Leu Asp Val Tyr Ala Ala Met Pro Val Arg Ile Ile Asp Thr Ile  
 500 505 510  
 Ile Gly Ala Ser Leu Ala Trp Ala Ala Val Ser Tyr Leu Trp Pro Asp  
 515 520 525  
 Trp Lys Tyr Leu Thr Leu Glu Arg Thr Ala Ala Leu Ala Val Cys Ser  
 530 535 540  
 Ser Gly Thr Tyr Leu Gln Lys Ile Ala Glu Arg Leu Lys Thr Gly Glu  
 545 550 555 560  
 Thr Gly Asp Asp Ile Glu Tyr Arg Ile Thr Arg Arg Arg Ala His Glu  
 565 570 575  
 His Thr Ala Ala Leu Ser Ser Thr Leu Ser Asp Met Ser Ser Glu Pro  
 580 585 590  
 Ala Lys Phe Ala Asp Ser Leu Gln Pro Gly Phe Thr Leu Leu Lys Thr  
 595 600 605  
 Gly Tyr Ala Leu Thr Gly Tyr Ile Ser Ala Leu Gly Ala Tyr Arg Ser  
 610 615 620  
 Glu Met His Glu Glu Cys Ser Pro Asp Phe Thr Ala Gln Phe His Leu  
 625 630 635 640  
 Ala Ala Glu His Thr Ala His Ile Phe Gln His Leu Pro Asp Met Gly  
 645 650 655  
 Pro Asp Asp Phe Gln Thr Ala Leu Asp Thr Leu Arg Gly Glu Leu Gly  
 660 665 670  
 Thr Leu Arg Thr Arg Ser Ser Gly Thr Gln Ser His Ile Leu Leu Gln  
 675 680 685  
 Gln Leu Gln Leu Ile Ala Arg Gln Leu Glu Pro Tyr Tyr Arg Ala Tyr  
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<210> 113  
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 <212> DNA  
 <213> Neisseria meningitidis

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gccccagcgt	ttgtgccgat	tttggcgga	tacaaggaaa	cgcggttcaa	agaggcggcg	240
aagcctttat	ccgccatgtg	gcggggatgc	tgctggtttg	actggttatc	gttaccgcgc	300
tgggcatact	tgccgcgcct	tgggtgattt	atgtttccgc	acccgagttt	tgcccaagat	360
gccgacaaat	ttcagctctc	catcgatttg	ctgcggatta	cgtttcctta	tatattattg	420
atttcctgt	cttcatttgt	cggtcggta	ctcaattctt	atcataagtt	cggcattccg	480
gcgtttacgc	cacgtttctg	aacgtgtcgt	ttatcgtatt	cgcgctgttt	ttcgtgccgt	540
atttcgatcc	gcccgttacc	gcgcyggcgt	gggcggtcct	tgctggcggc	attttgcaac	600
tcgrmttcca	actgccctgg	ctggcgaaac	tgggcttttt	gaaactgccc	aaactgagtt	660
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gcgtggcgca	ggtttctttg	gtgatcaaca	cgattttcgc	gtcttatctg	caatcgggca	780
gcgtttcatg	gatgtattac	gccgaccgca	tgatggagct	gccagcggc	gtgctggggg	840
cggcactcgg	tacgattttg	ctgcgactt	tgccaaaca	ctcggcaaac	caagatacgg	900
aacagttttc	cgccctgtct	gactgggggt	tgcgcctgtg	catgctgctg	acgctgccgg	960
cggcggtcgg	actggcggtg	ttgtcgttcc	cgctgggtgg	gacgctgttt	atgtaccgcg	1020
watttacgct	gtttgacgcg	cagatgacgc	aacacgcgct	gattgcctat	tctttcggtt	1080
taatcggtt	aatcatgatt	aaagtgttgg	caccgcgctt	ctatgcgcgg	caaaacatca	1140
awamgcccgt	caaaatcgcc	atcttcacgc	tcatctgcmc	gcagttgatg	aaccttgsct	1200
ttaycgcccc	actrraacrc	astcggactt	tcgcttgcca	tcggtctggg	cgcgtgtatc	1260
aatgccggat	tgttgtttta	cctgttgccg	agacacggta	tttaccaacc	tggcaagggt	1320
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 <213> *Neisseria meningitidis*

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<220>  
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 Gly Ala Gly Met Ala Thr Asp Ala Phe Phe Val Ala Phe Lys Leu Pro  
 35 40 45  
 Asn Leu Leu Arg Arg Val Phe Ala Glu Gly Ala Phe Ala Gln Ala Phe  
 50 55 60  
 Val Pro Ile Leu Ala Glu Tyr Lys Glu Thr Arg Ser Lys Glu Ala Xaa  
 65 70 75 80  
 Glu Ala Phe Ile Arg His Val Ala Gly Met Leu Ser Phe Val Leu Val  
 85 90 95  
 Ile Val Thr Ala Leu Gly Ile Leu Ala Ala Pro Trp Val Ile Tyr Val  
 100 105 110  
 Ser Ala Pro Ser Phe Ala Gln Asp Ala Asp Lys Phe Gln Leu Ser Ile  
 115 120 125  
 Asp Leu Leu Arg Ile Thr Phe Pro Tyr Ile Leu Leu Ile Ser Leu Ser



130				135				140							
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Ala	Phe	Thr	Pro	Xaa	Phe	Leu	Asn	Val	Ser	Phe	Ile	Val	Phe	Ala	Leu
				165					170					175	
Phe	Phe	Val	Pro	Tyr	Phe	Asp	Pro	Pro	Val	Thr	Ala	Xaa	Ala	Trp	Ala
			180					185					190		
Val	Phe	Val	Gly	Gly	Ile	Leu	Gln	Leu	Xaa	Phe	Gln	Leu	Pro	Trp	Leu
		195					200					205			
Ala	Lys	Leu	Gly	Phe	Leu	Lys	Leu	Pro	Lys	Leu	Ser	Phe	Lys	Asp	Ala
	210					215					220				
Ala	Val	Asn	Arg	Val	Met	Lys	Gln	Met	Ala	Pro	Ala	Ile	Leu	Gly	Val
225					230					235					240
Ser	Val	Ala	Gln	Val	Ser	Leu	Val	Ile	Asn	Thr	Ile	Phe	Ala	Ser	Tyr
			245						250					255	
Leu	Gln	Ser	Gly	Ser	Val	Ser	Trp	Met	Tyr	Tyr	Ala	Asp	Arg	Met	Met
		260						265					270		
Glu	Leu	Pro	Ser	Gly	Val	Leu	Gly	Ala	Ala	Leu	Gly	Thr	Ile	Leu	Leu
		275					280					285			
Pro	Thr	Leu	Ser	Lys	His	Ser	Ala	Asn	Gln	Asp	Thr	Glu	Gln	Phe	Ser
	290					295					300				
Ala	Leu	Leu	Asp	Trp	Gly	Leu	Arg	Leu	Cys	Met	Leu	Leu	Thr	Leu	Pro
305					310					315					320
Ala	Ala	Val	Gly	Leu	Ala	Val	Leu	Ser	Phe	Pro	Leu	Val	Ala	Thr	Leu
				325					330					335	
Phe	Met	Tyr	Arg	Xaa	Phe	Thr	Leu	Phe	Asp	Ala	Gln	Met	Thr	Gln	His
			340					345					350		
Ala	Leu	Ile	Ala	Tyr	Ser	Phe	Gly	Leu	Ile	Gly	Leu	Ile	Met	Ile	Lys
		355					360					365			
Val	Leu	Ala	Pro	Gly	Phe	Tyr	Ala	Arg	Gln	Asn	Ile	Xaa	Xaa	Pro	Val
		370				375					380				
Lys	Ile	Ala	Ile	Phe	Thr	Leu	Ile	Cys	Xaa	Gln	Leu	Met	Asn	Leu	Xaa
385					390					395					400
Phe	Xaa	Gly	Pro	Leu	Xaa	Xaa	Ile	Gly	Leu	Ser	Leu	Ala	Ile	Gly	Leu
				405					410					415	
Gly	Ala	Cys	Ile	Asn	Ala	Gly	Leu	Leu	Phe	Tyr	Leu	Leu	Arg	Arg	His
			420				425						430		

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Cys Cys Ser Arg Ser Pro  
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 <212> DNA  
 <213> *Neisseria meningitidis*

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 gcccaagcgt ttgtgccgat tttggcggaa tacaaggaaa cgcgttcaaa agaggcggcg 240  
 gaggtcttta tccgccatgt ggcggggatg ctgtcgcttg tactggttat cgttaccgcg 300  
 ctgggcatac ttgccgcgcc ttgggtgatt tatgtttccg caccgggttt tgcccaagat 360  
 gccgacaaat ttcagctctc catcgatttg ctgcggatta cgtttcctta tatattattg 420  
 atttccctgt cttcatttgt cggctcggta ctcaattctt atcataagtt cggcattccg 480  
 gcgtttacgc ccacgtttct gaacgtgtcg tttatcgat tcgcgctggt tttcggtccg 540  
 tatttcgatc cgcccggtac cgcgctggcg tgggcgggtc ttgtcggcg cattttgcaa 600  
 ctcggtctcc aactgccctg gctggcgaaa ctgggctttt tgaaactgcc caaactgagt 660  
 ttcaaagatg cggcgggtcaa ccgcgtgatg aaacagatgg cgcctgcgat tttgggcgtg 720  
 agcgtggcgc aggtttcttt ggtgatcaac acgattttcg cgtcttatct gcaatcgggc 780  
 agcgtttcat ggatgtatta cgccgaccgc atgatggagc tgcccagcgg cgtgctgggg 840  
 gcggcactcg gtacgatttt gctgccgact ttgtccaaac actcggcaaa ccaagatacg 900  
 gaacagtttt ccgccctgct cgactggggg ttgcgcctgt gcatgctgct gacgtgccc 960  
 gcggcgggtc gactggcggt gttgtcgctt ccgctgggtg cgacgctggt tatgtaccgc 1020  
 gaatttacgc tgtttgacgc gcagatgacg caacacgcgc tgattgccta ttctttcggt 1080  
 ttaatcggtc taatcatgat taaagtgttg gcacccggct tctatgcgcg gcaaaacatc 1140  
 aaaacgcccg tcaaaatcgc catcttcacg ctcatctgca cgcagttgat gaaccttgcc 1200  
 tttatcggcc cactgaaaca cgtcggactt tcgcttgcca tcggtctggg cgcgtgtatc 1260  
 aatgccggat tggtgtttta cctgttgccc agacacggta tttaccaacc tggcaagggt 1320  
 tgggcagcgt tcttagcaaa aatgctgctc tcgctcgccc tgatgtgcgg cggactgtgg 1380  
 gcagcgcagg cttacctgcc gtttgaatgg gcgcacggcg gcggaatgcg gaaagcgggg 1440  
 cagctctgca tctcgattgc cgtcggcggc ggactgtatt tcgcatcact ggcggccttg 1500  
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 <211> 512  
 <212> PRT  
 <213> *Neisseria meningitidis*

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 Gly Ala Gly Met Ala Thr Asp Ala Phe Phe Val Ala Phe Lys Leu Pro  
 35 40 45  
 Asn Leu Leu Arg Arg Val Phe Ala Glu Gly Ala Phe Ala Gln Ala Phe  
 50 55 60

Val	Pro	Ile	Leu	Ala	Glu	Tyr	Lys	Glu	Thr	Arg	Ser	Lys	Glu	Ala	Ala	65	70	75	80
Glu	Ala	Phe	Ile	Arg	His	Val	Ala	Gly	Met	Leu	Ser	Phe	Val	Leu	Val	85	90	95	
Ile	Val	Thr	Ala	Leu	Gly	Ile	Leu	Ala	Ala	Pro	Trp	Val	Ile	Tyr	Val	100	105	110	
Ser	Ala	Pro	Gly	Phe	Ala	Gln	Asp	Ala	Asp	Lys	Phe	Gln	Leu	Ser	Ile	115	120	125	
Asp	Leu	Leu	Arg	Ile	Thr	Phe	Pro	Tyr	Ile	Leu	Leu	Ile	Ser	Leu	Ser	130	135	140	
Ser	Phe	Val	Gly	Ser	Val	Leu	Asn	Ser	Tyr	His	Lys	Phe	Gly	Ile	Pro	145	150	155	160
Ala	Phe	Thr	Pro	Thr	Phe	Leu	Asn	Val	Ser	Phe	Ile	Val	Phe	Ala	Leu	165	170	175	
Phe	Phe	Val	Pro	Tyr	Phe	Asp	Pro	Pro	Val	Thr	Ala	Leu	Ala	Trp	Ala	180	185	190	
Val	Phe	Val	Gly	Gly	Ile	Leu	Gln	Leu	Gly	Phe	Gln	Leu	Pro	Trp	Leu	195	200	205	
Ala	Lys	Leu	Gly	Phe	Leu	Lys	Leu	Pro	Lys	Leu	Ser	Phe	Lys	Asp	Ala	210	215	220	
Ala	Val	Asn	Arg	Val	Met	Lys	Gln	Met	Ala	Pro	Ala	Ile	Leu	Gly	Val	225	230	235	240
Ser	Val	Ala	Gln	Val	Ser	Leu	Val	Ile	Asn	Thr	Ile	Phe	Ala	Ser	Tyr	245	250	255	
Leu	Gln	Ser	Gly	Ser	Val	Ser	Trp	Met	Tyr	Tyr	Ala	Asp	Arg	Met	Met	260	265	270	
Glu	Leu	Pro	Ser	Gly	Val	Leu	Gly	Ala	Ala	Leu	Gly	Thr	Ile	Leu	Leu	275	280	285	
Pro	Thr	Leu	Ser	Lys	His	Ser	Ala	Asn	Gln	Asp	Thr	Glu	Gln	Phe	Ser	290	295	300	
Ala	Leu	Leu	Asp	Trp	Gly	Leu	Arg	Leu	Cys	Met	Leu	Leu	Thr	Leu	Pro	305	310	315	320
Ala	Ala	Val	Gly	Leu	Ala	Val	Leu	Ser	Phe	Pro	Leu	Val	Ala	Thr	Leu	325	330	335	
Phe	Met	Tyr	Arg	Glu	Phe	Thr	Leu	Phe	Asp	Ala	Gln	Met	Thr	Gln	His	340	345	350	
Ala	Leu	Ile	Ala	Tyr	Ser	Phe	Gly	Leu	Ile	Gly	Leu	Ile	Met	Ile	Lys	355	360	365	

Val Leu Ala Pro Gly Phe Tyr Ala Arg Gln Asn Ile Lys Thr Pro Val  
370 375 380

Lys Ile Ala Ile Phe Thr Leu Ile Cys Thr Gln Leu Met Asn Leu Ala  
385 390 395 400

Phe Ile Gly Pro Leu Lys His Val Gly Leu Ser Leu Ala Ile Gly Leu  
405 410 415

Gly Ala Cys Ile Asn Ala Gly Leu Leu Phe Tyr Leu Leu Arg Arg His  
420 425 430

Gly Ile Tyr Gln Pro Gly Lys Gly Trp Ala Ala Phe Leu Ala Lys Met  
435 440 445

Leu Leu Ser Leu Ala Val Met Cys Gly Gly Leu Trp Ala Ala Gln Ala  
450 455 460

Tyr Leu Pro Phe Glu Trp Ala His Ala Gly Gly Met Arg Lys Ala Gly  
465 470 475 480

Gln Leu Cys Ile Leu Ile Ala Val Gly Gly Gly Leu Tyr Phe Ala Ser  
485 490 495

Leu Ala Ala Leu Gly Phe Arg Pro Arg His Phe Lys Arg Val Glu Asn  
500 505 510

<210> 117  
<211> 1539  
<212> DNA  
<213> Neisseria meningitidis

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<223> N= Unknown

<400> 117

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ttctttgtcg	cgttcaaact	gccaacctg	cttcgccgcg	tgtttgcgga	gggggcgttt	180
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gaggctttta	tccgccatgt	ggcggggatg	ctgtcgtttg	tactgggtcat	cgttaccgcg	300
ctgggcatac	ttgccgcgcc	ttgggtgatt	tatgtttccg	cacccggttt	tgccaaagat	360
gccgacaaat	ttcagctctc	tatcgatttg	ctgcggatta	cgtttcctta	tatcttattg	420
atttcacttt	cctcttttgt	cggtcggga	ctcaattcct	atcataaatt	cagcattcct	480
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gcggcggtcg	gaatggcggt	gttgctgttc	ccgctggttg	caaccttggt	tatgtaccga	1020
gaattcacgc	tgtttgacgc	gcagatgacg	caacacgcgc	tgattgccta	ttctttcgtg	1080

ttaatcggtt	taatcatgat	taaagtgttg	gcgcccggct	tttatgcgcg	gcaaaacatc	1140
aaaacgccc	tcaaaatcgc	catcttcacg	ctcatttgca	cgcagttgat	gaaccttgcc	1200
tttatcgcc	cactgaaaca	cgtcggactt	tcgcttgcca	tcggtctggg	cgcgtgtatc	1260
aatgcccgat	tgttgtttta	cctgttgccg	agacacggta	tttaccaacc	tggcaaggg	1320
tgggcagcgt	tcttggaaca	aatgctgctc	tcgctcgccg	tgatgggagg	cggcctgtat	1380
gccgccccaa	tctggctgcc	gttcgactgg	gcacacgccc	gcggaatgca	aaaggccgcc	1440
cggctcttca	tcctgattgc	cgtcggcgcc	ggactgtatt	tcgcatcact	ggcggttttg	1500
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 <213> Neisseria meningitidis

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 Gly Ala Gly Met Ala Thr Asp Ala Phe Phe Val Ala Phe Lys Leu Pro  
 35 40 45  
 Asn Leu Leu Arg Arg Val Phe Ala Glu Gly Ala Phe Ala Gln Ala Phe  
 50 55 60  
 Val Pro Ile Leu Ala Glu Tyr Lys Glu Thr Arg Ser Lys Glu Ala Thr  
 65 70 75 80  
 Glu Ala Phe Ile Arg His Val Ala Gly Met Leu Ser Phe Val Leu Val  
 85 90 95  
 Ile Val Thr Ala Leu Gly Ile Leu Ala Ala Pro Trp Val Ile Tyr Val  
 100 105 110  
 Ser Ala Pro Gly Phe Ala Lys Asp Ala Asp Lys Phe Gln Leu Ser Ile  
 115 120 125  
 Asp Leu Leu Arg Ile Thr Phe Pro Tyr Ile Leu Leu Ile Ser Leu Ser  
 130 135 140  
 Ser Phe Val Gly Ser Val Leu Asn Ser Tyr His Lys Phe Ser Ile Pro  
 145 150 155 160  
 Ala Phe Thr Pro Thr Phe Leu Asn Val Ser Phe Ile Val Phe Ala Leu  
 165 170 175  
 Phe Phe Val Pro Tyr Phe Asp Pro Pro Val Thr Ala Leu Ala Trp Ala  
 180 185 190

Val	Phe	Val	Gly	Gly	Ile	Leu	Gln	Leu	Gly	Phe	Gln	Leu	Pro	Trp	Leu	195	200	205
Ala	Lys	Leu	Gly	Phe	Leu	Lys	Leu	Pro	Lys	Leu	Ser	Phe	Lys	Asp	Ala	210	215	220
Ala	Val	Asn	Arg	Val	Met	Lys	Gln	Met	Ala	Pro	Ala	Ile	Leu	Gly	Val	225	230	235
Ser	Val	Ala	Gln	Ile	Ser	Leu	Val	Ile	Asn	Thr	Ile	Phe	Ala	Ser	Tyr	245	250	255
Leu	Gln	Ser	Gly	Ser	Val	Ser	Trp	Met	Tyr	Tyr	Ala	Asp	Arg	Met	Met	260	265	270
Glu	Leu	Pro	Gly	Gly	Val	Leu	Gly	Ala	Ala	Leu	Gly	Thr	Ile	Leu	Leu	275	280	285
Pro	Thr	Leu	Ser	Lys	His	Ser	Ala	Asn	Gln	Asp	Thr	Glu	Gln	Phe	Ser	290	295	300
Ala	Leu	Leu	Asp	Trp	Gly	Leu	Arg	Xaa	Cys	Met	Leu	Leu	Thr	Leu	Pro	305	310	315
Ala	Ala	Val	Gly	Met	Ala	Val	Leu	Ser	Phe	Pro	Leu	Val	Ala	Thr	Leu	325	330	335
Phe	Met	Tyr	Arg	Glu	Phe	Thr	Leu	Phe	Asp	Ala	Gln	Met	Thr	Gln	His	340	345	350
Ala	Leu	Ile	Ala	Tyr	Ser	Phe	Gly	Leu	Ile	Gly	Leu	Ile	Met	Ile	Lys	355	360	365
Val	Leu	Ala	Pro	Gly	Phe	Tyr	Ala	Arg	Gln	Asn	Ile	Lys	Thr	Pro	Val	370	375	380
Lys	Ile	Ala	Ile	Phe	Thr	Leu	Ile	Cys	Thr	Gln	Leu	Met	Asn	Leu	Ala	385	390	395
Phe	Ile	Gly	Pro	Leu	Lys	His	Val	Gly	Leu	Ser	Leu	Ala	Ile	Gly	Leu	405	410	415
Gly	Ala	Cys	Ile	Asn	Ala	Gly	Leu	Leu	Phe	Tyr	Leu	Leu	Arg	Arg	His	420	425	430
Gly	Ile	Tyr	Gln	Pro	Gly	Lys	Gly	Trp	Ala	Ala	Phe	Leu	Ala	Lys	Met	435	440	445
Leu	Leu	Ser	Leu	Ala	Val	Met	Gly	Gly	Gly	Leu	Tyr	Ala	Ala	Gln	Ile	450	455	460
Trp	Leu	Pro	Phe	Asp	Trp	Ala	His	Ala	Gly	Gly	Met	Gln	Lys	Ala	Ala	465	470	475
Arg	Leu	Phe	Ile	Leu	Ile	Ala	Val	Gly	Gly	Gly	Leu	Tyr	Phe	Ala	Ser	485	490	495

Leu Ala Ala Leu Gly Phe Arg Pro Arg His Phe Lys Arg Val Glu Ser  
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<210> 119  
<211> 8  
<212> DNA  
<213> Neisseria gonorrhoeae

<220>  
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<223> N= Unknown

<400> 119  
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<210> 120  
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<213> Neisseria gonorrhoeae

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Gly Ala Gly Met Ala Thr Asp Ala Phe Phe Val Ala Phe Lys Leu Pro  
35 40 45  
Asn Leu Leu Arg Arg Val Phe Ala Glu Gly Ala Phe Ala Gln Ala Phe  
50 55 60  
Val Pro Ile Leu Ala Glu Tyr Lys Glu Thr Arg Ser Lys Glu Ala Thr  
65 70 75 80  
Glu Ala Phe Ile Arg His Val Ala Gly Met Leu Ser Phe Val Leu Ile  
85 90 95  
Val Val Thr Ala Leu Gly Ile Leu Ala Ala Pro Trp Val Ile Tyr Val  
100 105 110  
Ser Ala Pro Gly Phe Thr Lys Asp Ala Asp Lys Phe Gln Leu Ser Ile  
115 120 125  
Ser Leu Leu Arg Ile Thr Phe Pro Tyr Ile Leu Leu Ile Ser Leu Ser  
130 135 140  
Ser Phe Val Gly Ser Ile Leu Asn Ser Tyr His Lys Phe Gly Ile Pro  
145 150 155 160  
Ala Phe Thr Pro Thr Phe Leu Asn Ile Ser Phe Ile Val Phe Ala Leu  
165 170 175  
Phe Phe Val Pro Tyr Phe Asp Pro Pro Val Thr Ala Leu Ala Trp Ala

180					185					190						
Val	Phe	Val	Gly	Gly	Ile	Leu	Gln	Leu	Gly	Phe	Gln	Leu	Pro	Trp	Leu	
195					200					205						
Ala	Lys	Leu	Gly	Phe	Leu	Lys	Leu	Pro	Lys	Leu	Asn	Phe	Lys	Asp	Ala	
210					215					220						
Ala	Val	Asn	Arg	Val	Met	Lys	Gln	Met	Ala	Pro	Ala	Ile	Leu	Gly	Val	
225					230					235					240	
Ser	Val	Ala	Gln	Ile	Ser	Leu	Val	Ile	Asn	Thr	Ile	Phe	Ala	Ser	Tyr	
245					250					255						
Leu	Gln	Ser	Gly	Ser	Val	Ser	Trp	Met	Tyr	Tyr	Ala	Asp	Arg	Met	Met	
260					265					270						
Glu	Leu	Pro	Gly	Gly	Val	Leu	Gly	Ala	Ala	Leu	Gly	Thr	Ile	Leu	Leu	
275					280					285						
Pro	Thr	Leu	Ser	Lys	His	Ser	Ala	Asn	Gln	Asp	Thr	Glu	Gln	Phe	Ser	
290					295					300						
Ala	Leu	Leu	Asp	Trp	Gly	Leu	Arg	Leu	Cys	Met	Leu	Leu	Thr	Leu	Pro	
305					310					315					320	
Ala	Ala	Ala	Gly	Leu	Ala	Val	Leu	Ser	Phe	Pro	Leu	Val	Ala	Thr	Leu	
325					330					335						
Phe	Met	Tyr	Arg	Glu	Phe	Thr	Leu	Phe	Asp	Ala	Gln	Met	Thr	Gln	His	
340					345					350						
Ala	Leu	Ile	Ala	Tyr	Ser	Phe	Gly	Leu	Ile	Gly	Leu	Ile	Met	Ile	Lys	
355					360					365						
Val	Leu	Ala	Ser	Gly	Phe	Tyr	Ala	Arg	Gln	Asn	Ile	Lys	Thr	Pro	Val	
370					375					380						
Lys	Ile	Ala	Ile	Phe	Thr	Leu	Ile	Cys	Thr	Gln	Leu	Met	Asn	Leu	Ala	
385					390					395					400	
Phe	Ile	Gly	Pro	Leu	Lys	His	Ala	Gly	Leu	Ser	Leu	Ala	Ile	Gly	Leu	
405					410					415						
Gly	Ala	Cys	Ile	Asn	Ala	Gly	Leu	Leu	Phe	Phe	Leu	Phe	Arg	Lys	His	
420					425					430						
Gly	Ile	Tyr	Arg	Pro	Gly	Gln	Gly	Leu	Gly	Gln	Pro	Ser	Trp	Arg	Lys	
435					440					445						
Cys	Cys	Ser	Arg	Ser	Pro											
450																

<210> 121  
 <211> 1539  
 <212> DNA



<213> Neisseria gonorrhoeae

<400> 121

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ttttttgtcg	cgttcaaaact	gcccacactg	cttcgcgcgg	tgtttgcgga	gggggcggtt	180
gccaagcgt	ttgtgccgat	tttggcgga	tataaggaaa	cgcgttctaa	agaggcgacg	240
gaggctttta	tccgccacgt	tgcgggaatg	ctgtcgtttg	tgctgatcgt	cgttaccgcg	300
ctgggcatac	ttgccgcgcc	ttgggtgatt	tatgtttccg	cgcccggtt	taccaaagac	360
gcggacaagt	tccaactttc	catcagcctg	ctgcggatta	cgtttcctta	tatattattg	420
atttctttgt	cttcttttgt	cggctcgata	ctcaattcct	accataagtt	cggcattccc	480
gcgtttacgc	ccacgttttt	aaacatctct	tttatcgat	tcgcactggt	tttcgtgccg	540
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gaacagtttt	ccgccttgct	cgactggggt	ttgcgcctgt	gcagtctgct	gacgctgccg	960
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ttaatcggtt	taattatgat	taaagtgttg	gcatccggct	tttatgcgcg	gcaaaacatc	1140
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gcggcgccag	cttgccctgcc	gttcgaatgg	gcgcacgcgc	gcggaatgcg	gaaagcgggg	1440
cagctctgca	tcctgattgc	cgtcggcgcc	ggactgtatt	tcgcatctct	ggcggctttg	1500
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<210> 122

<211> 512

<212> PRT

<213> Neisseria gonorrhoeae

<400> 122

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20	25	30			
Gly Ala Gly	Met Ala Thr	Asp Ala Phe	Phe Val Ala	Phe Lys Leu	Pro
35	40	45			
Asn Leu Leu	Arg Arg Val	Phe Ala Glu	Gly Ala Phe	Ala Gln Ala	Phe
50	55	60			
Val Pro Ile	Leu Ala Glu	Tyr Lys Glu	Thr Arg Ser	Lys Glu Ala	Thr
65	70	75	80		
Glu Ala Phe	Ile Arg His	Val Ala Gly	Met Leu Ser	Phe Val Leu	Ile
85	90	95			
Val Val Thr	Ala Leu Gly	Ile Leu Ala	Ala Pro Trp	Val Ile Tyr	Val
100	105	110			

Ser	Ala	Pro	Gly	Phe	Thr	Lys	Asp	Ala	Asp	Lys	Phe	Gln	Leu	Ser	Ile	115	120	125
Ser	Leu	Leu	Arg	Ile	Thr	Phe	Pro	Tyr	Ile	Leu	Leu	Ile	Ser	Leu	Ser	130	135	140
Ser	Phe	Val	Gly	Ser	Ile	Leu	Asn	Ser	Tyr	His	Lys	Phe	Gly	Ile	Pro	145	150	155
Ala	Phe	Thr	Pro	Thr	Phe	Leu	Asn	Ile	Ser	Phe	Ile	Val	Phe	Ala	Leu	165	170	175
Phe	Phe	Val	Pro	Tyr	Phe	Asp	Pro	Pro	Val	Thr	Ala	Leu	Ala	Trp	Ala	180	185	190
Val	Phe	Val	Gly	Gly	Ile	Leu	Gln	Leu	Gly	Phe	Gln	Leu	Pro	Trp	Leu	195	200	205
Ala	Lys	Leu	Gly	Phe	Leu	Lys	Leu	Pro	Lys	Leu	Asn	Phe	Lys	Asp	Ala	210	215	220
Ala	Val	Asn	Arg	Val	Met	Lys	Gln	Met	Ala	Pro	Ala	Ile	Leu	Gly	Val	225	230	235
Ser	Val	Ala	Gln	Ile	Ser	Leu	Val	Ile	Asn	Thr	Ile	Phe	Ala	Ser	Tyr	245	250	255
Leu	Gln	Ser	Gly	Ser	Val	Ser	Trp	Met	Tyr	Tyr	Ala	Asp	Arg	Met	Met	260	265	270
Glu	Leu	Arg	Arg	Gly	Val	Leu	Gly	Ala	Ala	Leu	Gly	Thr	Ile	Leu	Leu	275	280	285
Pro	Thr	Leu	Ser	Lys	His	Ser	Ala	Asn	Gln	Asp	Thr	Glu	Gln	Phe	Ser	290	295	300
Ala	Leu	Leu	Asp	Trp	Gly	Leu	Arg	Leu	Cys	Met	Leu	Leu	Thr	Leu	Pro	305	310	315
Ala	Ala	Ala	Gly	Leu	Ala	Val	Leu	Ser	Phe	Pro	Leu	Val	Ala	Thr	Leu	325	330	335
Phe	Met	Tyr	Arg	Glu	Phe	Thr	Leu	Phe	Asp	Ala	Gln	Met	Thr	Gln	His	340	345	350
Ala	Leu	Ile	Ala	Tyr	Ser	Phe	Gly	Leu	Ile	Gly	Leu	Ile	Met	Ile	Lys	355	360	365
Val	Leu	Ala	Ser	Gly	Phe	Tyr	Ala	Arg	Gln	Asn	Ile	Lys	Thr	Pro	Val	370	375	380
Lys	Ile	Ala	Ile	Phe	Thr	Leu	Ile	Cys	Thr	Gln	Leu	Met	Asn	Leu	Ala	385	390	395
Phe	Ile	Gly	Pro	Leu	Lys	His	Ala	Gly	Leu	Ser	Leu	Ala	Ile	Gly	Leu	405	410	415

Gly Ala Cys Ile Asn Ala Gly Leu Leu Phe Phe Leu Leu Arg Lys His  
 420 425 430

Gly Ile Tyr Arg Pro Gly Arg Gly Trp Ala Ala Phe Leu Ala Lys Met  
 435 440 445

Leu Leu Ala Leu Ala Val Met Cys Gly Gly Leu Trp Ala Ala Gln Ala  
 450 455 460

Cys Leu Pro Phe Glu Trp Ala His Ala Gly Gly Met Arg Lys Ala Gly  
 465 470 475 480

Gln Leu Cys Ile Leu Ile Ala Val Gly Gly Gly Leu Tyr Phe Ala Ser  
 485 490 495

Leu Ala Ala Leu Gly Phe Arg Pro Arg His Phe Lys Arg Val Glu Ser  
 500 505 510

<210> 123  
 <211> 474  
 <212> DNA  
 <213> Neisseria meningitidis

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 ccctcgatga aagtcaagga aggcgatgcc gtcaaaaaag gccaaagtgt gtttgaagac 180  
 aaaaagaatc cgggcgtggt gtttactgcg ccggcttcag gcaaaatcgc cgcgattcac 240  
 cgtggcgaaa agcgcgtact tcagtcagtc gtgattgccg ttgaargcaa cgacgaaatc 300  
 gagtttgaac gctacgcacc tgaagcgctg gcaaacttaa gcggcgaaaga agtgcgccgc 360  
 aacctgatcc aatccggttt gtggactgcg ctgcgcaccc gtccggttcag caaaattcct 420  
 gccgtcgatg ccgagccggt cgccatcttc gtcaatgcga tggacaccaa tccg 474

<210> 124  
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 <213> Neisseria meningitidis

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 20 25 30  
 Gly Glu Glu Tyr Ala Gly Met Arg Pro Ser Met Lys Val Lys Glu Gly  
 35 40 45  
 Asp Ala Val Lys Lys Gly Gln Val Leu Phe Glu Asp Lys Lys Asn Pro  
 50 55 60

Gly Val Val Phe Thr Ala Pro Ala Ser Gly Lys Ile Ala Ala Ile His  
65 70 75 80

Arg Gly Glu Lys Arg Val Leu Gln Ser Val Val Ile Ala Val Glu Xaa  
85 90 95

Asn Asp Glu Ile Glu Phe Glu Arg Tyr Ala Pro Glu Ala Leu Ala Asn  
100 105 110

Leu Ser Gly Glu Glu Val Arg Arg Asn Leu Ile Gln Ser Gly Leu Trp  
115 120 125

Thr Ala Leu Arg Thr Arg Pro Phe Ser Lys Ile Pro Ala Val Asp Ala  
130 135 140

Glu Pro Phe Ala Ile Phe Val Asn Ala Met Asp Thr Asn Pro  
145 150 155

<210> 125  
<211> 1344  
<212> DNA  
<213> Neisseria meningitidis

<400> 125  
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ccctcgatga aagtcaagga aggcgatgcc gtcaaaaaag gccaatgtgt gtttgaagac 180  
aaaaagaatc cgggcgtggt gtttactgcm cgggcttcag gcaaaatcmc cgcgattcac 240  
cgtggcgaaa agcgcgtact tcagtcagtc gtgattgccg ttgaaggcaa cgacgaaatc 300  
gagtttgaac gctacgcacc tgaagcgctg gcaaacttaa gcggcgaaga agtgcgcgcg 360  
aacctgatcc aatccggttt gtggactgcm ctgcgcaccc gtccgttcag caaaattcct 420  
gccgtcgatg ccgagccggt cgcctatctt gtcaatgcga tggacaccaa tccgctggct 480  
gccgacccta cggtcattat caaagaagcc gccgaggatt tcaaacgcgg cctgttggtg 540  
ttgagccggt tgaccgaacg caaaatccat gtttgaagg cagctggcmc agacgtgcgc 600  
tctgaaaatg ctgccaacat cgaaacacat gaattcgcmc gcccgcatcc tgccgggtttg 660  
agtggcacgc acattcattt catcgagcmc gtccggcgca ataaaaccgt gtggaccatc 720  
aattatcaag atgtaattac cattggccgt ttgtttgcaa caggccgtct gaacaccgag 780  
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cacaatcaga tttccgttat cgaagaaggc cgcagcaaag agctgttcgcm ctgggttgcm 1020  
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ctcttcaagt tcaacacagc cgtcaacggc ggcgaccgcm ccatgggtgcm gattgggtact 1140  
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ggcgataccg acagcgcmga ggcattgggt tgcttggaa tggacgaaga agacctcgtc 1260  
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gaaaccattg agaaggaagg ctga 1344

<210> 126  
<211> 447  
<212> PRT  
<213> Neisseria meningitidis

<400> 126  
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Glu	Gln	Ala	Val	Tyr	Asp	Gly	Pro	Ala	Ile	Thr	Glu	Val	Ala	Leu	Leu	20	25	30
Gly	Glu	Glu	Tyr	Ala	Gly	Met	Arg	Pro	Ser	Met	Lys	Val	Lys	Glu	Gly	35	40	45
Asp	Ala	Val	Lys	Lys	Gly	Gln	Val	Leu	Phe	Glu	Asp	Lys	Lys	Asn	Pro	50	55	60
Gly	Val	Val	Phe	Thr	Ala	Pro	Ala	Ser	Gly	Lys	Ile	Ala	Ala	Ile	His	65	70	75
Arg	Gly	Glu	Lys	Arg	Val	Leu	Gln	Ser	Val	Val	Ile	Ala	Val	Glu	Gly	85	90	95
Asn	Asp	Glu	Ile	Glu	Phe	Glu	Arg	Tyr	Ala	Pro	Glu	Ala	Leu	Ala	Asn	100	105	110
Leu	Ser	Gly	Glu	Glu	Val	Arg	Arg	Asn	Leu	Ile	Gln	Ser	Gly	Leu	Trp	115	120	125
Thr	Ala	Leu	Arg	Thr	Arg	Pro	Phe	Ser	Lys	Ile	Pro	Ala	Val	Asp	Ala	130	135	140
Glu	Pro	Phe	Ala	Ile	Phe	Val	Asn	Ala	Met	Asp	Thr	Asn	Pro	Leu	Ala	145	150	155
Ala	Asp	Pro	Thr	Val	Ile	Ile	Lys	Glu	Ala	Ala	Glu	Asp	Phe	Lys	Arg	165	170	175
Gly	Leu	Leu	Val	Leu	Ser	Arg	Leu	Thr	Glu	Arg	Lys	Ile	His	Val	Cys	180	185	190
Lys	Ala	Ala	Gly	Ala	Asp	Val	Pro	Ser	Glu	Asn	Ala	Ala	Asn	Ile	Glu	195	200	205
Thr	His	Glu	Phe	Gly	Gly	Pro	His	Pro	Ala	Gly	Leu	Ser	Gly	Thr	His	210	215	220
Ile	His	Phe	Ile	Glu	Pro	Val	Gly	Ala	Asn	Lys	Thr	Val	Trp	Thr	Ile	225	230	235
Asn	Tyr	Gln	Asp	Val	Ile	Thr	Ile	Gly	Arg	Leu	Phe	Ala	Thr	Gly	Arg	245	250	255
Leu	Asn	Thr	Glu	Arg	Val	Ile	Ala	Leu	Gly	Gly	Ser	Gln	Val	Asn	Lys	260	265	270
Pro	Arg	Leu	Leu	Arg	Thr	Val	Leu	Gly	Ala	Lys	Val	Ser	Gln	Ile	Thr	275	280	285
Ala	Gly	Glu	Leu	Val	Asp	Thr	Asp	Asn	Arg	Val	Ile	Ser	Gly	Ser	Val	290	295	300
Leu	Asn	Gly	Ala	Ile	Thr	Gln	Gly	Ala	His	Asp	Tyr	Leu	Gly	Arg	Tyr	305	310	315
																		320

His Asn Gln Ile Ser Val Ile Glu Glu Gly Arg Ser Lys Glu Leu Phe  
                           325                          330                          335  
 Gly Trp Val Ala Pro Gln Pro Asp Lys Tyr Ser Ile Thr Arg Thr Thr  
                           340                          345                          350  
 Leu Gly His Phe Leu Lys Asn Lys Leu Phe Lys Phe Asn Thr Ala Val  
                           355                          360                          365  
 Asn Gly Gly Asp Arg Ala Met Val Pro Ile Gly Thr Tyr Glu Arg Val  
                           370                          375                          380  
 Met Pro Leu Asp Ile Leu Pro Thr Leu Leu Leu Arg Asp Leu Ile Val  
                           385                          390                          395                          400  
 Gly Asp Thr Asp Ser Ala Gln Ala Leu Gly Cys Leu Glu Leu Asp Glu  
                           405                          410                          415  
 Glu Asp Leu Ala Leu Cys Ser Phe Val Cys Pro Gly Lys Tyr Glu Tyr  
                           420                          425                          430  
 Gly Pro Leu Leu Arg Lys Val Leu Glu Thr Ile Glu Lys Glu Gly  
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<210> 127  
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 <213> Neisseria meningitidis

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 <223> N= Unknown

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<223> N= Unknown

<220>

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<222> (357)..(358)

<223> N= Unknown

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<223> N= Unknown

<400> 127

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ccctngatga	aagtcaagga	aggcgatgcc	gtcaaaaaag	gccaaagtgc	gtttgaagac	180
aaaaagnatc	cgggcggtgt	gtttaccg	cnngtttcag	gcaaaatcgc	cgccatccat	240
cgcggcgaaa	agcgcgtact	tcagtcggtc	gtgattgccg	ttgaaggcaa	cgacgaaatc	300
gagttcgaac	gctacgcgcc	cgaagcggtg	gcaaaactta	gcggcganga	antnngnngc	360
aatctgatcc	aatccggttt	gtggactg	ctgcgtancc	gtccgttcag	caaaatccct	420

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gcagaccctg	tggttgtgat	caaagaagcc	gncgangatt	tcagacgang	tntgctggta	540
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ccgcagccgg	acaaatactc	catcacgcgt	acgacctcgc	gccatttcct	gaaaaacaaa	1080
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<210> 128  
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 <213> *Neisseria meningitidis*

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<220>  
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 <223> Xaa= any amino acid

<220>  
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<220>  
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<223> Xaa= any amino acid

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20 25 30  
Gly Glu Glu Tyr Ala Gly Met Arg Pro Xaa Met Lys Val Lys Glu Gly  
35 40 45  
Asp Ala Val Lys Lys Gly Gln Val Leu Phe Glu Asp Lys Lys Xaa Pro  
50 55 60  
Gly Val Val Phe Thr Ala Pro Val Ser Gly Lys Ile Ala Ala Ile His  
65 70 75 80  
Arg Gly Glu Lys Arg Val Leu Gln Ser Val Val Ile Ala Val Glu Gly  
85 90 95  
Asn Asp Glu Ile Glu Phe Glu Arg Tyr Ala Pro Glu Ala Leu Ala Asn  
100 105 110  
Leu Ser Gly Xaa Glu Xaa Xaa Xaa Asn Leu Ile Gln Ser Gly Leu Trp  
115 120 125  
Thr Ala Leu Arg Xaa Arg Pro Phe Ser Lys Ile Pro Ala Val Asp Ala  
130 135 140  
Glu Pro Phe Ala Ile Phe Val Asn Ala Met Asp Thr Asn Pro Leu Ala  
145 150 155 160  
Ala Asp Pro Val Val Val Ile Lys Glu Ala Xaa Xaa Asp Phe Arg Arg  
165 170 175  
Xaa Xaa Leu Val Leu Ser Arg Leu Thr Glu Arg Lys Ile His Val Cys  
180 185 190  
Lys Ala Ala Gly Ala Asp Val Pro Ser Glu Asn Ala Ala Asn Ile Glu  
195 200 205  
Thr His Glu Phe Gly Gly Pro His Pro Ala Gly Leu Ser Gly Thr His  
210 215 220  
Ile His Phe Ile Glu Pro Val Gly Ala Asn Lys Thr Val Trp Thr Ile  
225 230 235 240

Asn Tyr Gln Asp Val Ile Ala Ile Gly Arg Leu Phe Ala Thr Gly Arg  
                           245                          250                          255  
 Leu Asn Thr Glu Arg Val Ile Ala Leu Gly Gly Ser Gln Val Asn Lys  
                           260                          265                          270  
 Pro Arg Leu Leu Arg Thr Val Leu Gly Ala Lys Val Ser Gln Ile Thr  
                           275                          280                          285  
 Ala Gly Glu Leu Val Asp Ala Asp Asn Arg Val Ile Ser Gly Ser Val  
                           290                          295                          300  
 Leu Asn Gly Ala Ile Thr Gln Gly Ala His Asp Tyr Leu Gly Arg Tyr  
 305                          310                          315                          320  
 His Asn Gln Ile Ser Val Ile Glu Glu Gly Arg Ser Lys Glu Leu Phe  
                           325                          330                          335  
 Gly Trp Val Ala Pro Gln Pro Asp Lys Tyr Ser Ile Thr Arg Thr Thr  
                           340                          345                          350  
 Leu Gly His Phe Leu Lys Asn Lys Leu Phe Lys Phe Thr Thr Ala Val  
                           355                          360                          365  
 Asn Gly Gly Asp Arg Ala Met Val Pro Ile Gly Thr Tyr Glu Arg Val  
                           370                          375                          380  
 Met Pro Leu Asp Ile Leu Pro Thr Leu Leu Leu Arg Asp Leu Ile Val  
 385                          390                          395                          400  
 Gly Asp Thr Asp Ser Ala Gln Ala Leu Gly Cys Leu Glu Leu Asp Glu  
                           405                          410                          415  
 Glu Asp Leu Ala Leu Cys Ser Phe Val Cys Pro Gly Lys Tyr Glu Xaa  
                           420                          425                          430  
 Gly Pro Leu Leu Arg Lys Val Leu Glu Thr Xaa Glu Lys Glu Gly  
                           435                          440                          445

<210> 129  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
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 <222> (1)..(8)  
 <223> N= Unknown

<400> 129  
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<210> 130  
 <211> 322  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 130

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Glu	Gln	Val	Ile	Tyr	Asp	Gly	Pro	Ala	Ile	Thr	Glu	Val	Ala	Leu	Leu
			20					25					30		
Gly	Glu	Glu	Tyr	Val	Gly	Met	Arg	Pro	Ser	Met	Lys	Ile	Lys	Glu	Gly
			35				40					45			
Glu	Ala	Val	Lys	Lys	Gly	Gln	Val	Leu	Phe	Glu	Asp	Lys	Lys	Asn	Pro
			50			55					60				
Gly	Val	Val	Phe	Thr	Ala	Pro	Ala	Ser	Gly	Lys	Ile	Ala	Ala	Ile	His
65					70					75					80
Arg	Gly	Glu	Lys	Arg	Val	Leu	Gln	Ser	Val	Val	Ile	Ala	Val	Glu	Gly
				85					90					95	
Asn	Asp	Glu	Ile	Glu	Phe	Glu	Arg	Tyr	Val	Pro	Glu	Ala	Leu	Ala	Lys
			100					105					110		
Leu	Ser	Ser	Glu	Lys	Val	Arg	Arg	Asn	Leu	Ile	Gln	Ser	Gly	Leu	Trp
			115				120					125			
Thr	Ala	Leu	Arg	Thr	Arg	Pro	Phe	Ser	Lys	Ile	Pro	Ala	Val	Asp	Ala
	130					135					140				
Glu	Pro	Phe	Ala	Ile	Phe	Val	Asn	Ala	Met	Asp	Thr	Asn	Pro	Leu	Ala
145					150					155					160
Ala	Asp	Pro	Thr	Val	Ile	Ile	Lys	Glu	Ala	Ala	Glu	Asp	Phe	Lys	Arg
				165				170					175		
Gly	Leu	Leu	Val	Leu	Ser	Arg	Leu	Thr	Glu	Arg	Lys	Ile	His	Val	Cys
			180					185					190		
Lys	Ala	Ala	Gly	Ala	Asp	Val	Pro	Ser	Glu	Asn	Ala	Ala	Asn	Ile	Glu
	195						200					205			
Thr	His	Glu	Phe	Gly	Gly	Pro	His	Pro	Ala	Gly	Leu	Ser	Gly	Thr	His
	210					215					220				
Ile	His	Phe	Ile	Glu	Pro	Val	Gly	Ala	Asn	Lys	Thr	Val	Trp	Thr	Ile
225					230					235					240
Asn	Tyr	Gln	Asp	Val	Ile	Ala	Ile	Gly	Arg	Leu	Phe	Val	Thr	Gly	Arg
				245					250					255	
Leu	Asn	Thr	Glu	Arg	Val	Val	Ala	Leu	Gly	Gly	Leu	Gln	Val	Asn	Lys
			260					265					270		
Pro	Arg	Leu	Leu	Arg	Thr	Val	Leu	Gly	Ala	Lys	Val	Ser	Gln	Leu	Thr
	275						280					285			
Ala	Gly	Glu	Leu	Val	Asp	Ala	Asp	Asn	Arg	Val	Ile	Ser	Gly	Ser	Val

290

295

300

Leu Asn Gly Ala Ile Ala Gln Gly Ala His Asp Tyr Leu Gly Arg Tyr  
 305 310 315 320

His Asn

<210> 131  
 <211> 1344  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 131  
 atgattaaaa tcaaaaaagg tctaaatctg cccatcgcgg gcagaccgga gcaagtcatt 60  
 tatgacggcc cggccattac cgaagtcgag ttgcttggcg aagaatatgt cggcatgagc 120  
 ccctcgatga aaatcaagga aggtgaagcc gtcaaaaaag gccaaagtgt gtttgaagac 180  
 aaaaagaatc cgggcgtagt atttactgag ccggcttcag gcaaaatcgc cgctattcac 240  
 cgtggcgaaa agcgcgtact tcagtcagtc gtgattgccc ttgaaggcaa cgacgaaatc 300  
 gagttcgaac gctacgtacc tgaagcgctg gcaaaattga gcagcgaaaa agtgcgccgc 360  
 aacctgattc aatcaggctt atggactgag cttcgacccc gtccgttcag caaaatccct 420  
 gccgtagatg ccgagccggt cgccatcttc gtcaatgcga tggacaccaa tccgctggct 480  
 gccgacccta cggatcatcat caaagaagcc gccgaagact tcaaacgcgc cctgttggtg 540  
 ttgagccgcc tgaccgaacg taaaatccat gtgtgtaaag cagcagggcg agacgtgccg 600  
 tctgaaaatg ctgccaatat cgaaacacat gaatttggcg gcccgcatcc tgccggcttg 660  
 agtggcacgc acattcattt catcgagcca gtcggcgcca ataaaaccgt gtggaccatc 720  
 aattatcaag acgtgattgc tatcggagct ttgttcgtaa caggccgtct gaataccgag 780  
 cgcgtgggtg ccttgggcgg cctgcaagtc aacaaaccgc gcctcttgcg taccgttttg 840  
 ggtgcgaagg tgtctcaact taccgcccgc gaattgggtg acgcggacaa ccgcgtgatt 900  
 tccggttcgg tattgaacgg tgcgattgca caaggcgcg atgattattt gggacgctac 960  
 cacaatcaga tttccgttat cgaagaaggc cgcagcaaag agctgttcgg ctgggttgcg 1020  
 ccgcagccgg acaaatactc catcacgcgc accactctcg gccatttcct aaaaaacaaa 1080  
 ctcttcaagt tcacgacagc cgtcaacggc ggcgaccgcg ccatgggtacc gatcggcact 1140  
 tatgagcgcg taatgccgtt ggacatcctg cctaccttgc ttttgcgaga tttaatcgtc 1200  
 ggcgataccg acagcgcgca ggctttgggt tgcttgggat tggacgaaga agacctcgct 1260  
 ttgtgcagct tcgtctgcc gggcaaatc gaatacggcc cgctgttgcg caaagtgcgtg 1320  
 gaaaccattg agaaggaagg ctga 1344

<210> 132  
 <211> 447  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 132  
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 Glu Gln Val Ile Tyr Asp Gly Pro Ala Ile Thr Glu Val Ala Leu Leu  
 20 25 30  
 Gly Glu Glu Tyr Val Gly Met Arg Pro Ser Met Lys Ile Lys Glu Gly  
 35 40 45  
 Glu Ala Val Lys Lys Gly Gln Val Leu Phe Glu Asp Lys Lys Asn Pro  
 50 55 60

Gly	Val	Val	Phe	Thr	Ala	Pro	Ala	Ser	Gly	Lys	Ile	Ala	Ala	Ile	His	65	70	75	80
Arg	Gly	Glu	Lys	Arg	Val	Leu	Gln	Ser	Val	Val	Ile	Ala	Val	Glu	Gly	85	90		95
Asn	Asp	Glu	Ile	Glu	Phe	Glu	Arg	Tyr	Val	Pro	Glu	Ala	Leu	Ala	Lys	100	105		110
Leu	Ser	Ser	Glu	Lys	Val	Arg	Arg	Asn	Leu	Ile	Gln	Ser	Gly	Leu	Trp	115	120		125
Thr	Ala	Leu	Arg	Thr	Arg	Pro	Phe	Ser	Lys	Ile	Pro	Ala	Val	Asp	Ala	130	135		140
Glu	Pro	Phe	Ala	Ile	Phe	Val	Asn	Ala	Met	Asp	Thr	Asn	Pro	Leu	Ala	145	150	155	160
Ala	Asp	Pro	Thr	Val	Ile	Ile	Lys	Glu	Ala	Ala	Glu	Asp	Phe	Lys	Arg	165	170		175
Gly	Leu	Leu	Val	Leu	Ser	Arg	Leu	Thr	Glu	Arg	Lys	Ile	His	Val	Cys	180	185		190
Lys	Ala	Ala	Gly	Ala	Asp	Val	Pro	Ser	Glu	Asn	Ala	Ala	Asn	Ile	Glu	195	200		205
Thr	His	Glu	Phe	Gly	Gly	Pro	His	Pro	Ala	Gly	Leu	Ser	Gly	Thr	His	210	215		220
Ile	His	Phe	Ile	Glu	Pro	Val	Gly	Ala	Asn	Lys	Thr	Val	Trp	Thr	Ile	225	230	235	240
Asn	Tyr	Gln	Asp	Val	Ile	Ala	Ile	Gly	Arg	Leu	Phe	Val	Thr	Gly	Arg	245	250		255
Leu	Asn	Thr	Glu	Arg	Val	Val	Ala	Leu	Gly	Gly	Leu	Gln	Val	Asn	Lys	260	265		270
Pro	Arg	Leu	Leu	Arg	Thr	Val	Leu	Gly	Ala	Lys	Val	Ser	Gln	Leu	Thr	275	280		285
Ala	Gly	Glu	Leu	Val	Asp	Ala	Asp	Asn	Arg	Val	Ile	Ser	Gly	Ser	Val	290	295	300	
Leu	Asn	Gly	Ala	Ile	Ala	Gln	Gly	Ala	His	Asp	Tyr	Leu	Gly	Arg	Tyr	305	310	315	320
His	Asn	Gln	Ile	Ser	Val	Ile	Glu	Glu	Gly	Arg	Ser	Lys	Glu	Leu	Phe	325	330		335
Gly	Trp	Val	Ala	Pro	Gln	Pro	Asp	Lys	Tyr	Ser	Ile	Thr	Arg	Thr	Thr	340	345		350
Leu	Gly	His	Phe	Leu	Lys	Asn	Lys	Leu	Phe	Lys	Phe	Thr	Thr	Ala	Val	355	360		365

Asn Gly Gly Asp Arg Ala Met Val Pro Ile Gly Thr Tyr Glu Arg Val  
 370 375 380

Met Pro Leu Asp Ile Leu Pro Thr Leu Leu Leu Arg Asp Leu Ile Val  
 385 390 395 400

Gly Asp Thr Asp Ser Ala Gln Ala Leu Gly Cys Leu Glu Leu Asp Glu  
 405 410 415

Glu Asp Leu Ala Leu Cys Ser Phe Val Cys Pro Gly Lys Tyr Glu Tyr  
 420 425 430

Gly Pro Leu Leu Arg Lys Val Leu Glu Thr Ile Glu Lys Glu Gly  
 435 440 445

<210> 133  
 <211> 961  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
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 <222> (4)..(4)  
 <223> N= Unknown

<220>  
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 <222> (7)..(7)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (23)..(23)  
 <223> N= Unknown

<400> 133  
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 agccagtacg tttgtgattg ctttgattgg ttattttggt actgaaaaaa tcgtcgaacc 120  
 gcaattgggc ctttatcaat cagatttgct acaagaagaa aaagacattc ggcattccaa 180  
 tgaaatcacg ctttggaat ataaaggatt aatttgggct ggcgtggtgt ttgttgccct 240  
 atccgcccta ttggcttggg gcatcgctcc tgccgacggt attttgctgc atcctgaaac 300  
 aggattggtt tccggttcgc cgtttttaaa atcgattggt gtttttattt tcttggtggt 360  
 tgcaactgcc ggcatgttt atggccgggt aaccggaagt ttgcgcggcg aacaggaagt 420  
 cgtaaatgcg myggccgaat cgatgagtag tctggsctt tmtttgswca kcatcttttt 480  
 tgccgcacag tttgtcgcat tttttaattg gacgaatatt gggcaatata ttgccgttaa 540  
 aggggcgacg ttcttaaaaag aagtcggcctt gggcggcagc gtgttggtta tcggttttat 600  
 tttaatttgt gcttttatca atctgatgat aggcctccgc tccgcgcaat gggcggtaac 660  
 tgccgcgatt ttcgtcccta tgctgatggt ggccggctac gcgcccgaag tcattcaagc 720  
 cgcttaccgc atcggtgatt ccgttaccaa tattattacg ccgatgatga gttatttcgg 780  
 gctgattatg gcgacggtgr kcmmtacaa aaaagatgcg ggcgtgggta cgctgattwc 840  
 tatgatgttg ccgtattccg ctttcttctt gattgcgtgg attgccttat tctgcatttg 900  
 ggtatttggt ttgggcctgc ccgtcggtcc cggcgcgccc acattctatc ccgcacctta 960  
 a 961

<210> 134  
 <211> 320

<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (2)..(3)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (8)..(9)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (145)..(145)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (153)..(153)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (155)..(155)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (157)..(158)  
<223> Xaa= any amino acid

<220>  
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<222> (268)..(269)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (281)..(281)  
<223> Xaa= any amino acid

<400> 134  
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20 25 30  
Phe Val Thr Glu Lys Ile Val Glu Pro Gln Leu Gly Pro Tyr Gln Ser  
35 40 45  
Asp Leu Ser Gln Glu Glu Lys Asp Ile Arg His Ser Asn Glu Ile Thr  
50 55 60

Pro Leu Glu Tyr Lys Gly Leu Ile Trp Ala Gly Val Val Phe Val Ala  
 65 70 75 80  
 Leu Ser Ala Leu Leu Ala Trp Ser Ile Val Pro Ala Asp Gly Ile Leu  
 85 90 95  
 Arg His Pro Glu Thr Gly Leu Val Ser Gly Ser Pro Phe Leu Lys Ser  
 100 105 110  
 Ile Val Val Phe Ile Phe Leu Leu Phe Ala Leu Pro Gly Ile Val Tyr  
 115 120 125  
 Gly Arg Val Thr Arg Ser Leu Arg Gly Glu Gln Glu Val Val Asn Ala  
 130 135 140  
 Xaa Ala Glu Ser Met Ser Thr Leu Xaa Leu Xaa Leu Xaa Xaa Ile Phe  
 145 150 155 160  
 Phe Ala Ala Gln Phe Val Ala Phe Phe Asn Trp Thr Asn Ile Gly Gln  
 165 170 175  
 Tyr Ile Ala Val Lys Gly Ala Thr Phe Leu Lys Glu Val Gly Leu Gly  
 180 185 190  
 Gly Ser Val Leu Phe Ile Gly Phe Ile Leu Ile Cys Ala Phe Ile Asn  
 195 200 205  
 Leu Met Ile Gly Ser Ala Ser Ala Gln Trp Ala Val Thr Ala Pro Ile  
 210 215 220  
 Phe Val Pro Met Leu Met Leu Ala Gly Tyr Ala Pro Glu Val Ile Gln  
 225 230 235 240  
 Ala Ala Tyr Arg Ile Gly Asp Ser Val Thr Asn Ile Ile Thr Pro Met  
 245 250 255  
 Met Ser Tyr Phe Gly Leu Ile Met Ala Thr Val Xaa Xaa Tyr Lys Lys  
 260 265 270  
 Asp Ala Gly Val Gly Thr Leu Ile Xaa Met Met Leu Pro Tyr Ser Ala  
 275 280 285  
 Phe Phe Leu Ile Ala Trp Ile Ala Leu Phe Cys Ile Trp Val Phe Val  
 290 295 300  
 Leu Gly Leu Pro Val Gly Pro Gly Ala Pro Thr Phe Tyr Pro Ala Pro  
 305 310 315 320

<210> 135  
 <211> 1569  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 135  
 atgagtcaaa ccgatacgca acgggacgga cgattttttac gcacagtcga atggctgggc 60  
 aatatgttgc cgcattccggt tacgctttttt attatttttca ttgtgttatt gctgattgcc 120



tctgccgtcg	gtgcgtat	cgactatcc	gtccccgatc	cgcgccctgt	tggtgcgaaa	180
ggacgtgccg	atgacggttt	gatttacatt	gtcagcctgc	tcaatgccga	cggtttttatc	240
aaaatcctga	cgcataccgt	taaaaatttc	accggtttcg	cgccgttggg	aacggtgttg	300
gtttctttat	tgggcgtggg	gattgcggaa	aaatcgggct	tgatttccgc	attaatgcgc	360
ttattgctca	caaaatcgcc	acgcaaactc	actactttta	tggttggttt	tacagggatt	420
ttatctaata	ccgcttctga	attgggctat	gtcgtcctaa	tccctttgtc	cgccatcatc	480
tttcattccc	tcggccgcca	tccgcttgcc	ggctctggctg	cggttttcgc	cggcgtttcg	540
ggcgggttatt	cgccaatct	gttcttaggc	acaatcgatc	cgctcttggc	aggcatcacc	600
caacaggcgg	cgcaa	atccatcccgac	tacgtcgtag	gccctgaagc	caactggttt	660
tttatggtag	ccagtacgtt	tgtgattgct	ttgattgggt	atthttgttac	tgaaaaaatc	720
gtcgaaccgc	aattgggccc	ttatcaatca	gatttgtcac	aagaagaaaa	agacattcgg	780
cattccaatg	aaatcacgcc	tttggaatat	aaaggattaa	tttgggctgg	cgtggtgttt	840
gttgccttat	ccgccctatt	ggcttggagc	atcgccctg	ccgacgggat	tttgcgtcat	900
cctgaaacag	gattggtttc	cggttcgccc	tttttaaaat	cgattgttgt	ttttattttc	960
ttgttggttg	cactgccggg	cattgtttat	ggccgggtaa	cccgaagttt	gcgcggcgaa	1020
caggaagtcg	ttaatgcat	ggccgaatcg	atgagtactc	tggggcttta	tttggtcac	1080
atcttttttg	ccgcacagtt	tgtcgcattt	tttaattgga	cgaatattgg	gcaatatatt	1140
gccgttaaag	gggcgacgtt	cttaaaagaa	gtcggcttgg	gcggcagcgt	gttggtttatc	1200
ggttttattt	taatttgtgc	ttttatcaat	ctgatgatag	gctccgcctc	cgcgcaatgg	1260
gcggtaactg	cgccgatttt	cgtccctatg	ctgatgttgg	ccggctacgc	gcccgaagtc	1320
attcaagccg	cttaccgcat	cggtgattcc	gttaccaata	ttattacgcc	gatgatgagt	1380
tatttcgggc	tgattatggc	gacggtgatc	aaatacaaaa	aagatgcggg	cgtgggtacg	1440
ctgatttcta	tgatgttgcc	gtattccgct	ttcttcttga	ttgcgtggat	tgctttattc	1500
tgcatttggg	tatttggttt	gggcctgccc	gtcggtcctg	gcgcgcccac	attctatccc	1560
gcaccttaa						1569

<210> 136

<211> 522

<212> PRT

<213> Neisseria meningitidis

<400> 136

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Glu	Trp	Leu	Gly	Asn	Met	Leu	Pro	His	Pro	Val	Thr	Leu	Phe	Ile	Ile
			20					25					30		

Phe	Ile	Val	Leu	Leu	Leu	Ile	Ala	Ser	Ala	Val	Gly	Ala	Tyr	Phe	Gly
		35					40					45			

Leu	Ser	Val	Pro	Asp	Pro	Arg	Pro	Val	Gly	Ala	Lys	Gly	Arg	Ala	Asp
	50					55					60				

Asp	Gly	Leu	Ile	Tyr	Ile	Val	Ser	Leu	Leu	Asn	Ala	Asp	Gly	Phe	Ile
65					70					75					80

Lys	Ile	Leu	Thr	His	Thr	Val	Lys	Asn	Phe	Thr	Gly	Phe	Ala	Pro	Leu
				85					90					95	

Gly	Thr	Val	Leu	Val	Ser	Leu	Leu	Gly	Val	Gly	Ile	Ala	Glu	Lys	Ser
			100					105					110		

Gly	Leu	Ile	Ser	Ala	Leu	Met	Arg	Leu	Leu	Leu	Thr	Lys	Ser	Pro	Arg
		115					120					125			

Lys	Leu	Thr	Thr	Phe	Met	Val	Val	Phe	Thr	Gly	Ile	Leu	Ser	Asn	Thr	130	135	140	
Ala	Ser	Glu	Leu	Gly	Tyr	Val	Val	Leu	Ile	Pro	Leu	Ser	Ala	Ile	Ile	145	150	155	160
Phe	His	Ser	Leu	Gly	Arg	His	Pro	Leu	Ala	Gly	Leu	Ala	Ala	Ala	Phe	165	170	175	
Ala	Gly	Val	Ser	Gly	Gly	Tyr	Ser	Ala	Asn	Leu	Phe	Leu	Gly	Thr	Ile	180	185	190	
Asp	Pro	Leu	Leu	Ala	Gly	Ile	Thr	Gln	Gln	Ala	Ala	Gln	Ile	Ile	His	195	200	205	
Pro	Asp	Tyr	Val	Val	Gly	Pro	Glu	Ala	Asn	Trp	Phe	Phe	Met	Val	Ala	210	215	220	
Ser	Thr	Phe	Val	Ile	Ala	Leu	Ile	Gly	Tyr	Phe	Val	Thr	Glu	Lys	Ile	225	230	235	240
Val	Glu	Pro	Gln	Leu	Gly	Pro	Tyr	Gln	Ser	Asp	Leu	Ser	Gln	Glu	Glu	245	250	255	
Lys	Asp	Ile	Arg	His	Ser	Asn	Glu	Ile	Thr	Pro	Leu	Glu	Tyr	Lys	Gly	260	265	270	
Leu	Ile	Trp	Ala	Gly	Val	Val	Phe	Val	Ala	Leu	Ser	Ala	Leu	Leu	Ala	275	280	285	
Trp	Ser	Ile	Val	Pro	Ala	Asp	Gly	Ile	Leu	Arg	His	Pro	Glu	Thr	Gly	290	295	300	
Leu	Val	Ser	Gly	Ser	Pro	Phe	Leu	Lys	Ser	Ile	Val	Val	Phe	Ile	Phe	305	310	315	320
Leu	Leu	Phe	Ala	Leu	Pro	Gly	Ile	Val	Tyr	Gly	Arg	Val	Thr	Arg	Ser	325	330	335	
Leu	Arg	Gly	Glu	Gln	Glu	Val	Val	Asn	Ala	Met	Ala	Glu	Ser	Met	Ser	340	345	350	
Thr	Leu	Gly	Leu	Tyr	Leu	Val	Ile	Ile	Phe	Phe	Ala	Ala	Gln	Phe	Val	355	360	365	
Ala	Phe	Phe	Asn	Trp	Thr	Asn	Ile	Gly	Gln	Tyr	Ile	Ala	Val	Lys	Gly	370	375	380	
Ala	Thr	Phe	Leu	Lys	Glu	Val	Gly	Leu	Gly	Gly	Ser	Val	Leu	Phe	Ile	385	390	395	400
Gly	Phe	Ile	Leu	Ile	Cys	Ala	Phe	Ile	Asn	Leu	Met	Ile	Gly	Ser	Ala	405	410	415	
Ser	Ala	Gln	Trp	Ala	Val	Thr	Ala	Pro	Ile	Phe	Val	Pro	Met	Leu	Met	420	425	430	

Leu Ala Gly Tyr Ala Pro Glu Val Ile Gln Ala Ala Tyr Arg Ile Gly  
 435 440 445

Asp Ser Val Thr Asn Ile Ile Thr Pro Met Met Ser Tyr Phe Gly Leu  
 450 455 460

Ile Met Ala Thr Val Ile Lys Tyr Lys Lys Asp Ala Gly Val Gly Thr  
 465 470 475 480

Leu Ile Ser Met Met Leu Pro Tyr Ser Ala Phe Phe Leu Ile Ala Trp  
 485 490 495

Ile Ala Leu Phe Cys Ile Trp Val Phe Val Leu Gly Leu Pro Val Gly  
 500 505 510

Pro Gly Ala Pro Thr Phe Tyr Pro Ala Pro  
 515 520

<210> 137  
 <211> 1569  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 137  
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 aatatgttgc cgcacccggt tacgctttttt attatttttca ttgtgttatt gctgattgcc 120  
 tctgccgccg gtgcgtatatt cggactatcc gtccecgatc cgcgccctgt tgggtgcgaaa 180  
 ggacgtgccg atgacggttt gattcacgtt gtcagcctgc tcgatgctga cggtttgatc 240  
 aaaatcctga cgcataccgt taaaaatttc accggttttcg cgcggttggg aacgggtgtg 300  
 gtttctttat tgggcgtggg gattgcggaa aaatcgggct tgatttcgcg attaatgcgc 360  
 ttattgctca caaaatctcc acgcaaactc actactttta tgggtgtttt tacagggatt 420  
 ttatctaata ccgcttctga attgggctat gtcgtcctaa tccctttgtc cgccatcacc 480  
 tttcattccc tcggccgcca tccgcttgcc ggtctggctg cggctttcgc cggcggttcg 540  
 ggcgggttatt cggccaatct gttcttaggc acaatcgatc cgtcttggc aggcaccacc 600  
 caacaggcgg cgcaaatcat ccatcccgac tacgtcgtag gccctgaagc caactggttt 660  
 tttatggtag ccagtacgtt tgtgattgct ttgattgggt attttgttac tgaaaaaatc 720  
 gtcgaaccgc aattgggccc ttatcaatca gatttgtcac aagaagaaaa agacattcga 780  
 cattccaatg aaatcacgcc tttggaatat aaaggattaa tttgggctgg cgtgggtgtt 840  
 gttgccttat ccgccctatt ggcttggagc atcgccctg cgcacgggat tttgcgtcat 900  
 cctgaaacag gattggtttc cggttcgccg tttttaaaat caattgttgt ttttattttc 960  
 ttgttggttg cactgccggg cattgtttat ggccgggtaa cccgaagttt gcgcggcgaa 1020  
 caggaagtcg ttaatgcgat ggccgaatcg atgagtactc tggggcttta tttggtcac 1080  
 atcttttttg ccgcacagtt tgtcgcattt ttaattgga cgaatattgg gcaatatatt 1140  
 gccgttaaag gggcgacgtt cttaaaagaa gtcggcttgg gcggcagcgt gttgtttatc 1200  
 ggtttttatt taatttgtgc ttttatcaat ctgatgatag gctccgcctc cgcgcaatgg 1260  
 gcggtaactg cgcggatttt cgtccctatg ctgatgttg cgggtacgc gccgaagtc 1320  
 attcaagccg cttaccgcat cggtgattcc gttaccaata ttattacgcc gatgatgagt 1380  
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 ctgatttcta tgatgttgcc gtattccgct ttcttcttga ttgcgtggat tgccttatcc 1500  
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 gcaccttaa 1569

<210> 138  
 <211> 522  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 138

Met	Ser	Gln	Thr	Asp	Thr	Gln	Arg	Asp	Gly	Arg	Phe	Leu	Arg	Thr	Val
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Glu	Trp	Leu	Gly	Asn	Met	Leu	Pro	His	Pro	Val	Thr	Leu	Phe	Ile	Ile
		20						25					30		
Phe	Ile	Val	Leu	Leu	Leu	Ile	Ala	Ser	Ala	Ala	Gly	Ala	Tyr	Phe	Gly
		35					40					45			
Leu	Ser	Val	Pro	Asp	Pro	Arg	Pro	Val	Gly	Ala	Lys	Gly	Arg	Ala	Asp
	50					55					60				
Asp	Gly	Leu	Ile	His	Val	Val	Ser	Leu	Leu	Asp	Ala	Asp	Gly	Leu	Ile
65					70					75					80
Lys	Ile	Leu	Thr	His	Thr	Val	Lys	Asn	Phe	Thr	Gly	Phe	Ala	Pro	Leu
				85					90					95	
Gly	Thr	Val	Leu	Val	Ser	Leu	Leu	Gly	Val	Gly	Ile	Ala	Glu	Lys	Ser
		100						105						110	
Gly	Leu	Ile	Ser	Ala	Leu	Met	Arg	Leu	Leu	Leu	Thr	Lys	Ser	Pro	Arg
		115					120					125			
Lys	Leu	Thr	Thr	Phe	Met	Val	Val	Phe	Thr	Gly	Ile	Leu	Ser	Asn	Thr
	130					135					140				
Ala	Ser	Glu	Leu	Gly	Tyr	Val	Val	Leu	Ile	Pro	Leu	Ser	Ala	Ile	Ile
145					150					155					160
Phe	His	Ser	Leu	Gly	Arg	His	Pro	Leu	Ala	Gly	Leu	Ala	Ala	Ala	Phe
				165					170					175	
Ala	Gly	Val	Ser	Gly	Gly	Tyr	Ser	Ala	Asn	Leu	Phe	Leu	Gly	Thr	Ile
		180						185					190		
Asp	Pro	Leu	Leu	Ala	Gly	Ile	Thr	Gln	Gln	Ala	Ala	Gln	Ile	Ile	His
	195						200					205			
Pro	Asp	Tyr	Val	Val	Gly	Pro	Glu	Ala	Asn	Trp	Phe	Phe	Met	Val	Ala
	210					215					220				
Ser	Thr	Phe	Val	Ile	Ala	Leu	Ile	Gly	Tyr	Phe	Val	Thr	Glu	Lys	Ile
225					230					235					240
Val	Glu	Pro	Gln	Leu	Gly	Pro	Tyr	Gln	Ser	Asp	Leu	Ser	Gln	Glu	Glu
			245						250					255	
Lys	Asp	Ile	Arg	His	Ser	Asn	Glu	Ile	Thr	Pro	Leu	Glu	Tyr	Lys	Gly
		260						265					270		
Leu	Ile	Trp	Ala	Gly	Val	Val	Phe	Val	Ala	Leu	Ser	Ala	Leu	Leu	Ala
	275						280					285			
Trp	Ser	Ile	Val	Pro	Ala	Asp	Gly	Ile	Leu	Arg	His	Pro	Glu	Thr	Gly

290	295	300
Leu Val Ser Gly Ser Pro Phe Leu Lys Ser Ile Val Val Phe Ile Phe 305 310 315 320		
Leu Leu Phe Ala Leu Pro Gly Ile Val Tyr Gly Arg Val Thr Arg Ser 325 330 335		
Leu Arg Gly Glu Gln Glu Val Val Asn Ala Met Ala Glu Ser Met Ser 340 345 350		
Thr Leu Gly Leu Tyr Leu Val Ile Ile Phe Phe Ala Ala Gln Phe Val 355 360 365		
Ala Phe Phe Asn Trp Thr Asn Ile Gly Gln Tyr Ile Ala Val Lys Gly 370 375 380		
Ala Thr Phe Leu Lys Glu Val Gly Leu Gly Gly Ser Val Leu Phe Ile 385 390 395 400		
Gly Phe Ile Leu Ile Cys Ala Phe Ile Asn Leu Met Ile Gly Ser Ala 405 410 415		
Ser Ala Gln Trp Ala Val Thr Ala Pro Ile Phe Val Pro Met Leu Met 420 425 430		
Leu Ala Gly Tyr Ala Pro Glu Val Ile Gln Ala Ala Tyr Arg Ile Gly 435 440 445		
Asp Ser Val Thr Asn Ile Ile Thr Pro Met Met Ser Tyr Phe Gly Leu 450 455 460		
Ile Met Ala Thr Val Ile Lys Tyr Lys Lys Asp Ala Gly Val Gly Thr 465 470 475 480		
Leu Ile Ser Met Met Leu Pro Tyr Ser Ala Phe Phe Leu Ile Ala Trp 485 490 495		
Ile Ala Leu Phe Cys Ile Trp Val Phe Val Leu Gly Leu Pro Val Gly 500 505 510		
Pro Gly Ala Pro Thr Phe Tyr Pro Ala Pro 515 520		

<210> 139  
 <211> 1569  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 139	
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aatatgttgc cgcacccggt tacgtttttt attatttttca ttgtgttatt gctgattgcc	120
tctgccgtcg gtgcgtattt cggactatcc gtccccgata cgcgtcctgt tggggcgaaa	180
ggacgtgccg atgacggttt gattcacgtt gtcagcctgc tcgatgccga cggtttgatc	240
aaaatcctga cgcataccgt taaaaatttc accggtttcg cgccgttggg aacgggtgtg	300
gtttctttat tgggcgtggg gattgcggaa aaatcgggct tgatttccgc attaatgcgc	360

ttattgctca	caaaatcccc	acgcaaactc	actactttta	tggttggttt	tacagggatt	420
ttatccaata	cggcttctga	attgggctat	gtcgtcctaa	tccctttgtc	cgccgctcatc	480
tttcattcgc	tgggccgcca	tccgcttgcc	ggtttggtcg	cggctttcgc	cggcggtttcg	540
ggcgggttatt	cggccaatct	gttcttaggc	acaatcgatc	cgtctttggc	aggcatcacc	600
caacaggcgg	cgcaaatcat	ccatcccgc	tacgtcgtag	gccctgaagc	caactgggtt	660
tttatggcag	ccagtacgtt	tgtgattgct	ttgattgggt	attttggtac	tgaaaaaatc	720
gtcgaaccgc	aattgggccc	ttatcaatca	gatttggtcac	aagaagaaaa	agacattcgg	780
cattccaatg	aaatcacgcc	tttggaatat	aaaggattaa	tttgggcagg	cgtgggtgtt	840
gttgcccttat	ccgccctatt	ggcttggagc	atcgccctg	ccgacggtat	tttgcgtcat	900
cctgaaacag	gattgggtgc	cggttcgccg	tttttaaaat	cgattggtgt	ttttattttc	960
ttgttggttg	cgtcgccggg	cattgtttat	ggccggataa	cccgaagttt	gcgcggcgaa	1020
cgggaagtcg	ttaatgcgat	ggccgaatcg	atgagtactt	tgggacttta	tttgggtcatc	1080
atcttttttg	ccgcacagtt	tgtcgcattt	tttaattgga	cgaatattgg	gcaatatatt	1140
gccgttaaag	ggcggtgtgt	cttaaaagaa	gtcggcttgg	gcggcagtg	gttggtttatc	1200
ggttttattt	taatttggtc	ttttatcaat	ctgatgatag	gtccgcctc	cgcgcaatgg	1260
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attcaagccg	cttaccgc	cggtgattcc	gttaccaata	ttattacgcc	gatgatgagt	1380
tatttcgggc	tgattatggc	gacggtaatc	aaatacaaaa	aagatgcggg	cgtaggcacg	1440
ctgatttcta	tgatgttgcc	gtattccgct	ttctttctaa	ttgcatggat	cgccttattc	1500
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gtgccttaa						1569

<210> 140  
 <211> 522  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 140  
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 Glu Trp Leu Gly Asn Met Leu Pro His Pro Val Thr Leu Phe Ile Ile  
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 Phe Ile Val Leu Leu Leu Ile Ala Ser Ala Val Gly Ala Tyr Phe Gly  
 35 40 45  
 Leu Ser Val Pro Asp Pro Arg Pro Val Gly Ala Lys Gly Arg Ala Asp  
 50 55 60  
 Asp Gly Leu Ile His Val Val Ser Leu Leu Asp Ala Asp Gly Leu Ile  
 65 70 75 80  
 Lys Ile Leu Thr His Thr Val Lys Asn Phe Thr Gly Phe Ala Pro Leu  
 85 90 95  
 Gly Thr Val Leu Val Ser Leu Leu Gly Val Gly Ile Ala Glu Lys Ser  
 100 105 110  
 Gly Leu Ile Ser Ala Leu Met Arg Leu Leu Leu Thr Lys Ser Pro Arg  
 115 120 125  
 Lys Leu Thr Thr Phe Met Val Val Phe Thr Gly Ile Leu Ser Asn Thr  
 130 135 140  
 Ala Ser Glu Leu Gly Tyr Val Val Leu Ile Pro Leu Ser Ala Val Ile

145		150		155		160
Phe His Ser Leu Gly Arg His Pro Leu Ala Gly Leu Ala Ala Ala Phe						
	165			170		175
Ala Gly Val Ser Gly Gly Tyr Ser Ala Asn Leu Phe Leu Gly Thr Ile						
	180		185			190
Asp Pro Leu Leu Ala Gly Ile Thr Gln Gln Ala Ala Gln Ile Ile His						
	195		200			205
Pro Asp Tyr Val Val Gly Pro Glu Ala Asn Trp Phe Phe Met Ala Ala						
	210		215			220
Ser Thr Phe Val Ile Ala Leu Ile Gly Tyr Phe Val Thr Glu Lys Ile						
225		230		235		240
Val Glu Pro Gln Leu Gly Pro Tyr Gln Ser Asp Leu Ser Gln Glu Glu						
	245		250			255
Lys Asp Ile Arg His Ser Asn Glu Ile Thr Pro Leu Glu Tyr Lys Gly						
	260		265			270
Leu Ile Trp Ala Gly Val Val Phe Val Ala Leu Ser Ala Leu Leu Ala						
	275		280			285
Trp Ser Ile Val Pro Ala Asp Gly Ile Leu Arg His Pro Glu Thr Gly						
	290		295			300
Leu Val Ala Gly Ser Pro Phe Leu Lys Ser Ile Val Val Phe Ile Phe						
305		310		315		320
Leu Leu Phe Ala Leu Pro Gly Ile Val Tyr Gly Arg Ile Thr Arg Ser						
	325		330			335
Leu Arg Gly Glu Arg Glu Val Val Asn Ala Met Ala Glu Ser Met Ser						
	340		345			350
Thr Leu Gly Leu Tyr Leu Val Ile Ile Phe Phe Ala Ala Gln Phe Val						
	355		360			365
Ala Phe Phe Asn Trp Thr Asn Ile Gly Gln Tyr Ile Ala Val Lys Gly						
	370		375			380
Ala Val Phe Leu Lys Lys Phe Arg Leu Gly Gly Ser Val Leu Phe Ile						
385		390		395		400
Gly Phe Ile Leu Ile Cys Ala Phe Ile Asn Leu Met Ile Gly Ser Ala						
	405		410			415
Ser Ala Gln Trp Ala Val Thr Ala Pro Ile Phe Val Pro Met Leu Met						
	420		425			430
Leu Ala Gly Asn Ala Pro Gln Val Ile Gln Ala Ala Tyr Arg Ile Gly						
	435		440			445

Asp Ser Val Thr Asn Ile Ile Thr Pro Met Met Ser Tyr Phe Gly Leu  
 450 455 460

Ile Met Ala Thr Val Ile Lys Tyr Lys Lys Asp Ala Gly Val Gly Thr  
 465 470 475 480

Leu Ile Ser Met Met Leu Pro Tyr Ser Ala Phe Phe Leu Ile Ala Trp  
 485 490 495

Ile Ala Leu Phe Cys Ile Trp Val Phe Val Leu Gly Leu Pro Val Gly  
 500 505 510

Pro Gly Thr Pro Thr Phe Tyr Pro Val Pro  
 515 520

<210> 141  
 <211> 503  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> N= Unknown

<220>  
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 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (459)..(459)  
 <223> N= Unknown

<400> 141  
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 gtgttttggtg cggcggcaca agactcggca atggcttcgc gcagtgcgtc tataccggta 180  
 ttttcagcaa cggaaatgcg gacggcggca atttttcccg cagcgtcgcg ccatatgccc 240  
 gtgttttggt cttcagacgg cagcaggctcg gttttgttgt acaccttgat gcacggaata 300  
 tcgccggcat ggatttcttg cagtacgttt tccacgtctt caatctgctg tccgctgttc 360  
 ggagcggcgg catcgacgac gtgcagcagc acatcggtt gcgcgggttc ttccagcgtg 420  
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 aggataatgc tgcattcggg act 503

<210> 142  
 <211> 167  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (7)..(8)  
 <223> Xaa= any amino acid



<220>

<221> misc\_feature

<222> (152)..(152)

<223> Xaa= any amino acid

<400> 142

Thr Ala Gly Ala Ala Gly Xaa Xaa Val Phe Val Phe Val Thr Asp Ser  
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Gln Val Glu Val Phe Gly Asn Ile Gln Thr Ala Val Glu Thr Gly Phe  
20 25 30

Phe His Gly Ile Ser Val Ser Ser Val Phe Gly Ala Ala Ala Gln Asp  
35 40 45

Ser Ala Met Ala Ser Arg Ser Ala Ser Ile Pro Val Phe Ser Ala Thr  
50 55 60

Glu Met Arg Thr Ala Ala Ile Phe Pro Ala Ala Ser Arg His Met Pro  
65 70 75 80

Val Phe Cys Ser Ser Asp Gly Ser Arg Ser Val Leu Leu Tyr Thr Leu  
85 90 95

Met His Gly Ile Ser Pro Ala Trp Ile Ser Cys Ser Thr Phe Ser Thr  
100 105 110

Ser Ser Ile Cys Cys Pro Leu Phe Gly Ala Ala Ala Ser Thr Thr Cys  
115 120 125

Ser Ser Thr Ser Ala Cys Ala Val Ser Ser Ser Val Ala Glu Lys Ala  
130 135 140

Glu Ile Ser Leu Cys Gly Arg Xaa Leu Thr Asn Pro Thr Val Ser Val  
145 150 155 160

Arg Ile Met Leu His Ser Gly  
165

<210> 143

<211> 1149

<212> DNA

<213> Neisseria meningitidis

<400> 143

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gcgttctttt	tggttggcgg	cttcgatttt	ttgcgcgtca	tagggtgcgg	cggtgtagcc	180
tatctgcctg	attttcaaca	gaatgtcggg	aaggcggatt	ttgccgtcgt	cccagacgac	240
gcggcagcgg	tgcgtgctgt	aattgaggtc	gatgcggacg	atgccgtctg	tacgcaaaag	300
ctgctgttcg	atcagccaga	cgcaggcggc	gcaggtgatg	ccgccgagca	ttaaaaccgc	360
ctcgcgcggtg	ccgccgtggg	tttccacaaa	gtcggactgg	acttcgggca	ggtcgtacag	420
gcggatttgg	tcgaggattt	cttggggcgg	cagctcggtt	ttttgcgcgt	cggcgggtgcg	480
ttgtttgtaa	taactgcccc	agcccgcgtc	aataatgctt	tgtgcgactg	cctgacaacc	540
ggcgcagcag	gtttcgcggt	cttcgttttc	gtaacggacg	gtcagatgca	ggttttcggg	600
aacgtccagc	ccgcagtggg	aacaggtttt	tttcatggca	tttcggtttc	gtctgtgttt	660

ggtgcggcgg	cacaatactc	ggcaatggct	tgcgcgagtg	cgtctataacc	ggtatttttca	720
gcaacggaaa	tgcggacggc	ggcaatTTTT	cccgcagcgt	cgcgccatat	gcccgtgttt	780
tggtcttcag	acggcagcag	gtcggTTTTg	ttgtacacct	tgatgcacgg	aatatcgccg	840
gcatggattt	cttgcagtag	gttttccacg	tcttcaatct	gctgtccgct	gttcggagcg	900
gcggcatcga	cgacgtgcag	cagcacatcg	gcttgccggg	tttcttccag	cgtggcggaa	960
aaggcggaaa	tcagtttgtg	cggcagatcg	ctgacgaatc	cgacggtatc	ggtcaggata	1020
atgctgcatt	cgggactgat	gtacagccgc	cgcgccgctg	tgtcgagtg	ggcgaaaagc	1080
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ttggtatag						1149

<210> 144  
 <211> 381  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 144

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Gly	Arg	Gln	Arg	Glu	His	His	Arg	Leu	His	His	Pro	Gln	Pro	Gly	Asn
			20					25						30	
Gly	Glu	Ala	Asp	Asp	Val	Leu	Phe	Ala	Phe	Phe	Leu	Val	Gly	Gly	Phe
		35					40					45			
Asp	Phe	Leu	Arg	Val	Ile	Gly	Cys	Gly	Gly	Val	Ala	Tyr	Leu	Pro	Asp
	50					55					60				
Phe	Gln	Gln	Asn	Val	Gly	Lys	Ala	Asp	Phe	Ala	Val	Val	Pro	Asp	Asp
65					70				75					80	
Ala	Ala	Ala	Val	Arg	Ala	Val	Ile	Glu	Val	Asp	Ala	Asp	Asp	Ala	Val
				85					90					95	
Cys	Thr	Gln	Lys	Leu	Leu	Phe	Asp	Gln	Pro	Asp	Ala	Gly	Gly	Ala	Gly
			100					105					110		
Asp	Ala	Ala	Glu	His	Asn	Arg	Leu	Ala	Arg	Ala	Ala	Val	Gly	Phe	His
	115						120					125			
Lys	Val	Gly	Leu	Asp	Phe	Gly	Gln	Val	Val	Gln	Ala	Asp	Leu	Val	Glu
	130					135					140				
Asp	Phe	Leu	Gly	Arg	Gln	Leu	Gly	Phe	Leu	Arg	Val	Gly	Gly	Ala	Leu
145					150					155				160	
Phe	Val	Ile	Thr	Ala	Gln	Ala	Arg	Val	Asn	Asn	Ala	Leu	Cys	Asp	Cys
				165					170					175	
Leu	Thr	Thr	Gly	Ala	Ala	Gly	Phe	Ala	Val	Phe	Val	Phe	Val	Thr	Asp
			180					185					190		
Gly	Gln	Met	Gln	Val	Phe	Gly	Asn	Val	Gln	Pro	Ala	Val	Glu	Thr	Gly
		195					200					205			
Phe	Phe	His	Gly	Ile	Ser	Val	Ser	Ser	Val	Phe	Gly	Ala	Ala	Ala	Gln



Gly	Lys	Ala	Asp	Asp	Val	Leu	Phe	Ala	Phe	Phe	Leu	Val	Gly	Gly	Phe	35	40	45
Asp	Phe	Leu	Arg	Val	Ile	Gly	Cys	Gly	Gly	Val	Ala	Cys	Leu	Pro	Asp	50	55	60
Phe	Gln	Gln	Asn	Val	Gly	Glu	Ala	Asp	Phe	Ala	Val	Val	Pro	Asp	Asp	65	70	75
Ala	Ala	Ala	Val	Arg	Ala	Val	Ile	Glu	Val	Asp	Ala	Asp	Asp	Ala	Val	85	90	95
Cys	Ala	Gln	Lys	Leu	Leu	Phe	Asp	Gln	Pro	Asp	Ala	Gly	Gly	Ala	Gly	100	105	110
Asn	Ala	Ala	Glu	His	Gln	His	Cys	Phe	Val	Arg	Ala	Ile	Met	Gly	Phe	115	120	125
His	Lys	Val	Gly	Leu	Asp	Phe	Gly	Gln	Val	Val	Gln	Ala	Asp	Leu	Val	130	135	140
Glu	Asp	Phe	Leu	Gly	Arg	Gln	Phe	Gly	Phe	Phe	Arg	Val	Gly	Gly	Ala	145	150	155
Ser	Phe	Val	Ile	Thr	Ala	Gln	Ala	Gly	Ile	Asp	Asp	Ala	Leu	Cys	Asp	165	170	175
Cys	Leu	Thr	Ala	Asp	Ala	Ala	Gly	Phe	Ala	Val	Phe	Ala	Phe	Val	Ala	180	185	190
Asp	Gly	Gln	Met	Gln	Val	Phe	Gly	Asn	Val	Gln	Pro	Ala	Val	Glu	Thr	195	200	205
Gly	Phe	Phe	His	Gly	Ile	Ser	Val	Ser	Ser	Val	Phe	Gly	Ala	Ala	Ala	210	215	220
Gln	Tyr	Ser	Ala	Met	Ala	Ser	Arg	Ser	Ala	Ser	Ile	Pro	Val	Phe	Ser	225	230	235
Ala	Thr	Glu	Met	Arg	Thr	Ala	Ala	Ile	Phe	Pro	Ala	Ala	Ser	Arg	His	245	250	255
Met	Pro	Val	Phe	Cys	Ser	Ser	Asp	Gly	Ser	Arg	Ser	Val	Leu	Leu	Tyr	260	265	270
Thr	Leu	Met	His	Gly	Ile	Ser	Trp	Ala	Trp	Ile	Ser	Cys	Ser	Thr	Phe	275	280	285
Ser	Thr	Ser	Ser	Ile	Cys	Cys	Pro	Leu	Phe	Arg	Ala	Ala	Ala	Ser	Thr	290	295	300
Thr	Cys	Ser	Ser	Thr	Ser	Ala	Cys	Thr	Val	Ser	Ser	Lys	Val	Ala	Glu	305	310	315
Lys	Ala	Glu	Ile	Ser	Leu	Cys	Gly	Arg	Ser	Leu	Thr	Asn	Pro	Thr	Val	325	330	335

Ser Val Arg Ile Met Leu His Ala Gly Leu Met Tyr Ser Arg Arg Ala  
340 345 350

Val Val Ser Arg Val Ala Lys Ser Trp Ser Phe Ala Tyr Met Pro Asp  
355 360 365

Leu Val Ser Arg Leu Asn Arg Leu Asp Leu Pro Thr Leu Val  
370 375 380

<210> 147  
<211> 542  
<212> DNA  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (38)..(38)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (254)..(254)  
<223> N= Unknown

<220>  
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<222> (356)..(356)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (458)..(458)  
<223> N= Unknown

<400> 147  
ggccattact cgcaccgcac ttggaagccg cgtttggncc gccgccgtct gccgtatctg 60  
ctttatggca cgctgattgc ggttattgtg atgattttga tgccgaactc gggcagcttc 120  
ggtttcggct atgcgtcgct ggccgctttg tcgttcggcg cgctgatgat tgcgctgtta 180  
gacgtgtcgt caaatatggc gatgcagccg tttaagatga tggtcggcga catggtcaac 240  
gaggagcaga aaantacgcc tacgggattc aaagtttctt agcaaatacg ggcgcggtcg 300  
tgccggcgat tctgccgttt gtgtttgcgt atatcggttt ggcgaacacc gccganaaag 360  
gcgttggtgcc gcagaccgtg gtcgtggcgt tttatgtggg tgccggcgtt ctggtgatta 420  
ccagcgcgtt cacgattttc aaagtgaagg aatacgancc ggaaacctac gcccgttacc 480  
acggcatcga tgcgcgccgc aatcaggaaa aagccaactg gatcgactc ttaaaaccgc 540  
gc 542

<210> 148  
<211> 181  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (13)..(13)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (85)..(85)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (119)..(119)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (153)..(153)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (180)..(180)  
<223> Xaa= any amino acid

<400> 148  
Gly His Tyr Ser Asp Arg Thr Trp Lys Pro Arg Leu Xaa Gly Arg Arg  
1 5 10 15  
Leu Pro Tyr Leu Leu Tyr Gly Thr Leu Ile Ala Val Ile Val Met Ile  
20 25 30  
Leu Met Pro Asn Ser Gly Ser Phe Gly Phe Gly Tyr Ala Ser Leu Ala  
35 40 45  
Ala Leu Ser Phe Gly Ala Leu Met Ile Ala Leu Leu Asp Val Ser Ser  
50 55 60  
Asn Met Ala Met Gln Pro Phe Lys Met Met Val Gly Asp Met Val Asn  
65 70 75 80  
Glu Glu Gln Lys Xaa Tyr Ala Tyr Gly Ile Gln Ser Phe Leu Ala Asn  
85 90 95  
Thr Gly Ala Val Val Ala Ala Ile Leu Pro Phe Val Phe Ala Tyr Ile  
100 105 110  
Gly Leu Ala Asn Thr Ala Xaa Lys Gly Val Val Pro Gln Thr Val Val  
115 120 125  
Val Ala Phe Tyr Val Gly Ala Ala Leu Leu Val Ile Thr Ser Ala Phe  
130 135 140  
Thr Ile Phe Lys Val Lys Glu Tyr Xaa Pro Glu Thr Tyr Ala Arg Tyr  
145 150 155 160  
His Gly Ile Asp Val Ala Ala Asn Gln Glu Lys Ala Asn Trp Ile Ala  
165 170 175  
Leu Leu Lys Xaa Ala  
180

<210> 149  
 <211> 1356  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 149  
 atgtcgggaat atacgcctca aacagcaaaa caagggtttgc ccgcgctggc aaaaagcacg 60  
 atttggatgc tcagtttcgg ctttctcggc gttcagacgg cctttaccct gcaaagctcg 120  
 caaatgagcc gcatttttca aacgctaggg gcagaccgcg acaatttggg ctggtttttc 180  
 atcctgccgc cgctggcggg gatgctgggtg cagccgattg tcggccatta ctccgaccgc 240  
 acttgggaagc cgcgtttggg cggccgcgct ctgccgtatc tgctttatgg cacgctgatt 300  
 gcggttattg tgatgatttt gatgccgaac tcgggcagct tcggtttcgg ctatgcgtcg 360  
 ctggcggcct tgctgttcgg cgcgctgatg attgcgctgt tagacgtgtc gtcaaataatg 420  
 gcgatgcagc cgtttaagat gatggtcggc gacatgggtc acgaggagca gaaaggctac 480  
 gcctacggga ttcaaagttt cttagcaaat acgggcgcgg tcgtggcggc gattctgccg 540  
 tttgtgtttg cgtatatcgg tttggcgaac accgccgaga aaggcggtgt gccgcagacc 600  
 gtggtcgtgg cgttttatgt ggggtcggcg ttgctgggtg ttaccagcgc gttcacgatt 660  
 ttcaaagtga aggaatacga tccggaacc tacgcccgtt accacggcat cgatgtcgcc 720  
 gcgaatcagg aaaaagccaa ctggatcgaa ctcttgaaaa ccgcgcctaa ggcgttttgg 780  
 acggttactt tgggtcaatt cttctgctgg ttgccttcc aatatatgtg gacttactcg 840  
 gcaggcgcga ttgcgaaaaa cgtctggcac accaccgatg cgtcttccgt aggttatcag 900  
 gaggcgggta actggtagcg cgttttggcg gcggtgcagt cggttgcggc ggtgatttgt 960  
 tcgtttgtat tggcgaaagt gccgaataaa taccataagg cgggttattt cggctgtttg 1020  
 gctttgggcg cgctcggctt tttctcgtt ttcttcacg gcaaccaata cgcgctgggtg 1080  
 ttgtcttata ccttaatcgg catcgcttgg gcgggcatta tcaattatcc gctgacgatt 1140  
 gtgaccaacg ccttgctcgg caagcatatg ggcacttact tgggcttgtt taacggctct 1200  
 atctgtatgc ctcaaactcg cgcttcgctg ttgagtttgc tgcttttccc tatgctgggc 1260  
 ggcttgcagg ccactatgtt cttggtaggg ggcgtcgctc tgctgctggg cgcgttttcc 1320  
 gtgttcctga ttaaagaaac acacggcggg gtttga 1356

<210> 150  
 <211> 451  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 150  
 Met Ser Glu Tyr Thr Pro Gln Thr Ala Lys Gln Gly Leu Pro Ala Leu  
 1 5 10 15  
 Ala Lys Ser Thr Ile Trp Met Leu Ser Phe Gly Phe Leu Gly Val Gln  
 20 25 30  
 Thr Ala Phe Thr Leu Gln Ser Ser Gln Met Ser Arg Ile Phe Gln Thr  
 35 40 45  
 Leu Gly Ala Asp Pro His Asn Leu Gly Trp Phe Phe Ile Leu Pro Pro  
 50 55 60  
 Leu Ala Gly Met Leu Val Gln Pro Ile Val Gly His Tyr Ser Asp Arg  
 65 70 75 80  
 Thr Trp Lys Pro Arg Leu Gly Gly Arg Arg Leu Pro Tyr Leu Leu Tyr  
 85 90 95  
 Gly Thr Leu Ile Ala Val Ile Val Met Ile Leu Met Pro Asn Ser Gly  
 100 105 110

Ser Phe Gly Phe Gly Tyr Ala	Ser Leu Ala Ala Leu Ser Phe Gly Ala
115	120 125
Leu Met Ile Ala Leu Leu Asp Val Ser Ser Asn Met Ala Met Gln Pro	
130	135 140
Phe Lys Met Met Val Gly Asp Met Val Asn Glu Glu Gln Lys Gly Tyr	
145	150 155 160
Ala Tyr Gly Ile Gln Ser Phe Leu Ala Asn Thr Gly Ala Val Val Ala	
	165 170 175
Ala Ile Leu Pro Phe Val Phe Ala Tyr Ile Gly Leu Ala Asn Thr Ala	
	180 185 190
Glu Lys Gly Val Val Pro Gln Thr Val Val Val Ala Phe Tyr Val Gly	
	195 200 205
Ala Ala Leu Leu Val Ile Thr Ser Ala Phe Thr Ile Phe Lys Val Lys	
	210 215 220
Glu Tyr Asp Pro Glu Thr Tyr Ala Arg Tyr His Gly Ile Asp Val Ala	
225	230 235 240
Ala Asn Gln Glu Lys Ala Asn Trp Ile Glu Leu Leu Lys Thr Ala Pro	
	245 250 255
Lys Ala Phe Trp Thr Val Thr Leu Val Gln Phe Phe Cys Trp Phe Ala	
	260 265 270
Phe Gln Tyr Met Trp Thr Tyr Ser Ala Gly Ala Ile Ala Glu Asn Val	
	275 280 285
Trp His Thr Thr Asp Ala Ser Ser Val Gly Tyr Gln Glu Ala Gly Asn	
	290 295 300
Trp Tyr Gly Val Leu Ala Ala Val Gln Ser Val Ala Ala Val Ile Cys	
305	310 315 320
Ser Phe Val Leu Ala Lys Val Pro Asn Lys Tyr His Lys Ala Gly Tyr	
	325 330 335
Phe Gly Cys Leu Ala Leu Gly Ala Leu Gly Phe Phe Ser Val Phe Phe	
	340 345 350
Ile Gly Asn Gln Tyr Ala Leu Val Leu Ser Tyr Thr Leu Ile Gly Ile	
	355 360 365
Ala Trp Ala Gly Ile Ile Thr Tyr Pro Leu Thr Ile Val Thr Asn Ala	
	370 375 380
Leu Ser Gly Lys His Met Gly Thr Tyr Leu Gly Leu Phe Asn Gly Ser	
385	390 395 400
Ile Cys Met Pro Gln Ile Val Ala Ser Leu Leu Ser Phe Val Leu Phe	
	405 410 415



Pro Met Leu Gly Gly Leu Gln Ala Thr Met Phe Leu Val Gly Gly Val  
 420 425 430

Val Leu Leu Leu Gly Ala Phe Ser Val Phe Leu Ile Lys Glu Thr His  
 435 440 445

Gly Gly Val  
 450

<210> 151  
 <211> 1356  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 151  
 atgtcggaa atacgcctca aacagcaaaa caaggtttgc ccgcgctggc aaaaagcacg 60  
 atttggaatc tcagtttcgg ctttctcggc gttcagacgg cctttaccct gcaaagctcg 120  
 cagatgagcc gcaccttcca gacgctcggg gccgatccgc acagcctcgg ctgggtctttt 180  
 atcctgcccgc cgctggcggg gatgctgggtg cagccgattg tcggccatta ctccgaccgc 240  
 acttggaagc cgcgtttggg cggccgcgct tcgcccgtatc tgctttatgg cagcgtgatt 300  
 gcggttattg tgatgatttt gatgccgaac tcgggcagct tcgggttcgg ctatgcgtcg 360  
 ctggcgggctt tgcgttcggc cgcgctgatg attgcgctgt tagacgtgtc gtcaaatatg 420  
 gcgatgcagc cgtttaagat gatggtcggc gacatgggtc acgaggagca gaaaggctac 480  
 gcctacggga ttcaaagttt cttagcgaat acgggcgcgg tcgtggcggc gattctgccc 540  
 tttgtgtttg cgtatatcgg tttggcgaac accgccgaga aaggcgttgt gccgcagacc 600  
 gtggctcgtg cgttttatgt ggggtgcggcg ttgctgggtg ttaccagcgc gttcacgatt 660  
 ttcaaagtga aggaatacaa tccggaacc tacgcccgtt accacggcat cgatgtcgcc 720  
 gcgaatcagg aaaaagccaa ctggatcgaa ctcttgaaaa ccgcgcctaa ggcgttttgg 780  
 acggttactt tgggtgcaatt cttctgctgg ttgccttcc aatatatgtg gacttactcg 840  
 gcaggcgcga ttgcggaaaa cgtctggcac accaccgatg cgtcttccgt aggttatcag 900  
 gaggcgggta actggtacgg cgttttggcg gcggtgcagt cgggtgcggc ggtgatttgt 960  
 tcgtttgtat tggcgaaagt gccgaataaa taccataagg cgggttattt cggctgtttg 1020  
 gctttgggcg cgctcggctt tttctccgtt ttcttcatcg gcaaccaata cgcgctgggtg 1080  
 ttgtcttata ccttaatcgg catcgcttgg gcgggcatta tcacttatcc gctgacgatt 1140  
 gtgaccaacg ccttgtcggg caagcatatg ggcacttact tgggcctgtt taacggctct 1200  
 atctgtatgc cgcaaategt cgcttcgctg ttgagtttcg tgcttttccc tatgctgggc 1260  
 ggcttgacgg ccactatgtt cttggtaggg ggcgtcgtcc tgctgctggg cgcgttttcc 1320  
 gtgttcctga ttaaagaaac acacggcggg gtttga 1356

<210> 152  
 <211> 451  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 152  
 Met Ser Glu Tyr Thr Pro Gln Thr Ala Lys Gln Gly Leu Pro Ala Leu  
 1 5 10 15  
 Ala Lys Ser Thr Ile Trp Met Leu Ser Phe Gly Phe Leu Gly Val Gln  
 20 25 30  
 Thr Ala Phe Thr Leu Gln Ser Ser Gln Met Ser Arg Ile Phe Gln Thr  
 35 40 45  
 Leu Gly Ala Asp Pro His Ser Leu Gly Trp Phe Phe Ile Leu Pro Pro  
 50 55 60

Leu	Ala	Gly	Met	Leu	Val	Gln	Pro	Ile	Val	Gly	His	Tyr	Ser	Asp	Arg	
65					70					75					80	
Thr	Trp	Lys	Pro	Arg	Leu	Gly	Gly	Arg	Arg	Leu	Pro	Tyr	Leu	Leu	Tyr	
				85					90					95		
Gly	Thr	Leu	Ile	Ala	Val	Ile	Val	Met	Ile	Leu	Met	Pro	Asn	Ser	Gly	
		100						105					110			
Ser	Phe	Gly	Phe	Gly	Tyr	Ala	Ser	Leu	Ala	Ala	Leu	Ser	Phe	Gly	Ala	
		115					120					125				
Leu	Met	Ile	Ala	Leu	Leu	Asp	Val	Ser	Ser	Asn	Met	Ala	Met	Gln	Pro	
	130					135					140					
Phe	Lys	Met	Met	Val	Gly	Asp	Met	Val	Asn	Glu	Glu	Gln	Lys	Gly	Tyr	
145				150					155						160	
Ala	Tyr	Gly	Ile	Gln	Ser	Phe	Leu	Ala	Asn	Thr	Gly	Ala	Val	Val	Ala	
			165						170					175		
Ala	Ile	Leu	Pro	Phe	Val	Phe	Ala	Tyr	Ile	Gly	Leu	Ala	Asn	Thr	Ala	
		180						185					190			
Glu	Lys	Gly	Val	Val	Pro	Gln	Thr	Val	Val	Val	Ala	Phe	Tyr	Val	Gly	
	195						200					205				
Ala	Ala	Leu	Leu	Val	Ile	Thr	Ser	Ala	Phe	Thr	Ile	Phe	Lys	Val	Lys	
	210					215					220					
Glu	Tyr	Asn	Pro	Glu	Thr	Tyr	Ala	Arg	Tyr	His	Gly	Ile	Asp	Val	Ala	
225				230						235					240	
Ala	Asn	Gln	Glu	Lys	Ala	Asn	Trp	Ile	Glu	Leu	Leu	Lys	Thr	Ala	Pro	
			245						250					255		
Lys	Ala	Phe	Trp	Thr	Val	Thr	Leu	Val	Gln	Phe	Phe	Cys	Trp	Phe	Ala	
		260					265						270			
Phe	Gln	Tyr	Met	Trp	Thr	Tyr	Ser	Ala	Gly	Ala	Ile	Ala	Glu	Asn	Val	
	275						280					285				
Trp	His	Thr	Thr	Asp	Ala	Ser	Ser	Val	Gly	Tyr	Gln	Glu	Ala	Gly	Asn	
	290					295					300					
Trp	Tyr	Gly	Val	Leu	Ala	Ala	Val	Gln	Ser	Val	Ala	Ala	Val	Ile	Cys	
305				310						315					320	
Ser	Phe	Val	Leu	Ala	Lys	Val	Pro	Asn	Lys	Tyr	His	Lys	Ala	Gly	Tyr	
			325						330					335		
Phe	Gly	Cys	Leu	Ala	Leu	Gly	Ala	Leu	Gly	Phe	Phe	Ser	Val	Phe	Phe	
		340						345					350			
Ile	Gly	Asn	Gln	Tyr	Ala	Leu	Val	Leu	Ser	Tyr	Thr	Leu	Ile	Gly	Ile	
	355						360					365				

Ala Trp Ala Gly Ile Ile Thr Tyr Pro Leu Thr Ile Val Thr Asn Ala  
370 375 380

Leu Ser Gly Lys His Met Gly Thr Tyr Leu Gly Leu Phe Asn Gly Ser  
385 390 395 400

Ile Cys Met Pro Gln Ile Val Ala Ser Leu Leu Ser Phe Val Leu Phe  
405 410 415

Pro Met Leu Gly Gly Leu Gln Ala Thr Met Phe Leu Val Gly Gly Val  
420 425 430

Val Leu Leu Leu Gly Ala Phe Ser Val Phe Leu Ile Lys Glu Thr His  
435 440 445

Gly Gly Val  
450

<210> 153  
<211> 1020  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 153  
atgatagggg atcgccgcgc cggcaaccat ttcggatttt ccaaagcaaa tacttttcaa 60  
atcaaaaaaa aggatttact ttatgtcgga atatacgctt caaacagcaa aacaagggtt 120  
gcccgcgcgc gcaaaaagca cgatttggat gttgagcttc ggctatctcg gcgttcagac 180  
ggcctttacc ctgcaaagct cgcagatgag ccgcattttt caaacgctag gcgcagaccc 240  
gcacaatttg ggctgggttt tcatcctgcc gccgctggcg gggatgctgg ttcagccgat 300  
agtggctact actcagaccg cacttggaa ggcgcttgg gcggccgcgc cctgccgtat 360  
ctgctttacg gcacgctgat tgcggtcac gtgatgattt tgatgccgaa ctcgggcagc 420  
ttcggtttcg gctatgcgtc gctggcggcc ttgtcgttcg gcgcgctgat gattgcgctg 480  
ttggacgtgt cgtcgaatat ggcatgacg ccgtttaaga tgatggtcgg cgatatggtc 540  
aacgaggagc agaaaagcta cgcctacggg attcaaagtt tcttagcgaa tacggacgcg 600  
gttggtggcag cgattctgcc gtttgtgttc gcgtatatcg gtttggcgaa cactgccgag 660  
aaaggcggtg tgccacaaac cgtggctgta gcattctatg tgggtgcggc gttactgatt 720  
attaccagtg cgttcacaat ctccaaagtc aaagaatacg acccggaac ctacgccgt 780  
taccacggca tcgatgtcgc cgcaatcag gaaaaagcca actggttcga actcttaaaa 840  
accgcgccta aagtgttttg gacggttact ccggtacagt ttttctgctg gttcgccttc 900  
cggatatatg ggacttactc ggcaggcgcg attgcagaaa acgtctggca cactaccgat 960  
gcgtcttccg taggccatca ggaggcgggc aaccggtacg gcgttttggc ggcgggtgtag 1020

<210> 154  
<211> 339  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 154  
Met Ile Gly Asp Arg Arg Ala Gly Asn His Phe Gly Phe Ser Lys Ala  
1 5 10 15  
Asn Thr Phe Gln Ile Lys Lys Lys Asp Leu Leu Tyr Val Gly Ile Tyr  
20 25 30  
Ala Ser Asn Ser Lys Thr Arg Phe Ala Arg Ala Gly Lys Lys His Asp  
35 40 45

Leu Asp Val Glu Leu Arg Leu Ser Arg Arg Ser Asp Gly Leu Tyr Pro  
 50 55 60  
 Ala Lys Leu Ala Asp Glu Pro His Phe Ser Asn Ala Arg Arg Arg Pro  
 65 70 75 80  
 Ala Gln Phe Gly Leu Val Phe His Pro Ala Ala Ala Gly Gly Asp Ala  
 85 90 95  
 Gly Ser Ala Asp Ser Gly Tyr Tyr Ser Asp Arg Thr Trp Lys Pro Arg  
 100 105 110  
 Leu Gly Gly Arg Arg Leu Pro Tyr Leu Leu Tyr Gly Thr Leu Ile Ala  
 115 120 125  
 Val Ile Val Met Ile Leu Met Pro Asn Ser Gly Ser Phe Gly Phe Gly  
 130 135 140  
 Tyr Ala Ser Leu Ala Ala Leu Ser Phe Gly Ala Leu Met Ile Ala Leu  
 145 150 155 160  
 Leu Asp Val Ser Ser Asn Met Ala Met Gln Pro Phe Lys Met Met Val  
 165 170 175  
 Gly Asp Met Val Asn Glu Glu Gln Lys Ser Tyr Ala Tyr Gly Ile Gln  
 180 185 190  
 Ser Phe Leu Ala Asn Thr Asp Ala Val Val Ala Ala Ile Leu Pro Phe  
 195 200 205  
 Val Phe Ala Tyr Ile Gly Leu Ala Asn Thr Ala Glu Lys Gly Val Val  
 210 215 220  
 Pro Gln Thr Val Val Val Ala Phe Tyr Val Gly Ala Ala Leu Leu Ile  
 225 230 235 240  
 Ile Thr Ser Ala Phe Thr Ile Ser Lys Val Lys Glu Tyr Asp Pro Glu  
 245 250 255  
 Thr Tyr Ala Arg Tyr His Gly Ile Asp Val Ala Ala Asn Gln Glu Lys  
 260 265 270  
 Ala Asn Trp Phe Glu Leu Leu Lys Thr Ala Pro Lys Val Phe Trp Thr  
 275 280 285  
 Val Thr Pro Val Gln Phe Phe Cys Trp Phe Ala Phe Arg Tyr Met Trp  
 290 295 300  
 Thr Tyr Ser Ala Gly Ala Ile Ala Glu Asn Val Trp His Thr Thr Asp  
 305 310 315 320  
 Ala Ser Ser Val Gly His Gln Glu Ala Gly Asn Arg Tyr Gly Val Leu  
 325 330 335  
 Ala Ala Val

<210> 155  
 <211> 358  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (111)..(111)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (122)..(122)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (138)..(138)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (140)..(140)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (243)..(243)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (251)..(251)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (259)..(259)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (291)..(291)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (344)..(344)  
 <223> N= Unknown

<400> 155  
 atgttggtcc gtaaaacgac cgccgcccgtt ttggcgcata ccttgatgct gaacggctgt 60  
 acgttgatgt tgtggggaat gaacaacccg gtcagcgaaa caatcacccg naaacacggt 120  
 gncaaagacc aaatccgn gn cttcgggtgtg gttgccgaag acaatgccca attggaaaag 180  
 ggcagcctgg tgatgatggg cggaaaatac tggttcgtcg tcaatcccga agattcggcg 240  
 aantgacggg nattttgang gcagggctgg acaaaccctt ccaaatagtt naggataccc 300

cgagctatgc tgccaccaag ccctgccggt caaactcgga tcgnetggca gccagaat

358

<210> 156  
<211> 120  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (41)..(41)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (47)..(47)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (81)..(82)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (87)..(87)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (98)..(98)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (104)..(104)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (116)..(116)  
<223> Xaa= any amino acid

<400> 156  
Met Leu Phe Arg Lys Thr Thr Ala Ala Val Leu Ala His Thr Leu Met  
1 5 10 15  
Leu Asn Gly Cys Thr Leu Met Leu Trp Gly Met Asn Asn Pro Val Ser  
20 25 30  
Glu Thr Ile Thr Arg Lys His Val Xaa Lys Asp Gln Ile Arg Xaa Phe  
35 40 45  
Gly Val Val Ala Glu Asp Asn Ala Gln Leu Glu Lys Gly Ser Leu Val  
50 55 60  
Met Met Gly Gly Lys Tyr Trp Phe Val Val Asn Pro Glu Asp Ser Ala

[illegible]

<400>	157						
atgttggttc	gtaaaacgac	cgccgcgctt	ttggcgga	ccttgatgct	gaacggctgt		60
acgttgatgt	tgtggggaat	gaacaaccgc	gtcagcgaaa	caatcacccg	caaacacgtt		120
gacaaagacc	aatccgcgc	cttcggtgtg	gttgccgaag	acaatgcca	attggaaaag		180
ggcagcctgg	tgatgatggg	cggaaaatac	tggttcgtcg	tcaatcccga	agattcggcg		240
aagctgacgg	gcatttttga	ggcagggtcg	gacaaacct	tccaaatagt	tgaggatacc		300
ccgagctatg	ctcgccacca	agccctgcgc	gtcaaaactcg	aatcgcttgg	cagccagaat		360
ttcagtaccg	aaggcctttg	cctgcgctac	gataccgaca	agcctgccga	catcgccaag		420
ctgaaacagc	tcgggtttga	agcgggtcaa	ctcgacaatc	ggaccattta	cacgcgctgc		480
gtatccgcc	aaggcaaata	ctacgccaca	ccgcaaaaac	tgaacgccga	ttaccatttt		540
gagcaaagt	tgccctgccga	tatttattac	acgggttactg	aagaacatac	cgacaaaatcc		600
aagctgtttg	caaatatctt	atatacgccc	ccctttttga	tactggatgc	ggcgggctgc		660
gtactggcct	tgccctgcgc	ggctctgggt	gcggctgtgg	atgccgcccg	caaatga		717

<400>	158														
Met	Leu	Phe	Arg	Lys	Thr	Thr	Ala	Ala	Val	Leu	Ala	Ala	Thr	Leu	Met
1				5					10					15	
Leu	Asn	Gly	Cys	Thr	Leu	Met	Leu	Trp	Gly	Met	Asn	Asn	Pro	Val	Ser
			20					25					30		
Glu	Thr	Ile	Thr	Arg	Lys	His	Val	Asp	Lys	Asp	Gln	Ile	Arg	Ala	Phe
		35					40					45			
Gly	Val	Val	Ala	Glu	Asp	Asn	Ala	Gln	Leu	Glu	Lys	Gly	Ser	Leu	Val
	50					55					60				
Met	Met	Gly	Gly	Lys	Tyr	Trp	Phe	Val	Val	Asn	Pro	Glu	Asp	Ser	Ala
65					70					75					80
Lys	Leu	Thr	Gly	Ile	Leu	Lys	Ala	Gly	Leu	Asp	Lys	Pro	Phe	Gln	Ile
				85					90					95	
Val	Glu	Asp	Thr	Pro	Ser	Tyr	Ala	Arg	His	Gln	Ala	Leu	Pro	Val	Lys
			100					105					110		

Leu Glu Ser Pro Gly Ser Gln Asn Phe Ser Thr Glu Gly Leu Cys Leu  
115 120 125

Arg Tyr Asp Thr Asp Lys Pro Ala Asp Ile Ala Lys Leu Lys Gln Leu  
130 135 140

Gly Phe Glu Ala Val Lys Leu Asp Asn Arg Thr Ile Tyr Thr Arg Cys  
145 150 155 160

Val Ser Ala Lys Gly Lys Tyr Tyr Ala Thr Pro Gln Lys Leu Asn Ala  
165 170 175

Asp Tyr His Phe Glu Gln Ser Val Pro Ala Asp Ile Tyr Tyr Thr Val  
180 185 190

Thr Glu Glu His Thr Asp Lys Ser Lys Leu Phe Ala Asn Ile Leu Tyr  
195 200 205

Thr Pro Pro Phe Leu Ile Leu Asp Ala Ala Gly Ala Val Leu Ala Leu  
210 215 220

Pro Ala Ala Ala Leu Gly Ala Val Val Asp Ala Ala Arg Lys  
225 230 235

<210> 159  
<211> 714  
<212> DNA  
<213> Neisseria meningitidis

<400> 159  
atgttggttc gtaaaacgac cgccgcccgtt ttggcggcaa ccttgatggt gaacggctgt 60  
acggtaatga tgtgggggtat gaacagccccg ttcagcgaaa cgaccgccccg caaacacggt 120  
gacaaggacc aaatccgcgc ctccggtgtg gttgccgaag acaatgccca attggaaaag 180  
ggcagcctgg tgatgatggg cgggaaatac tggttcgtcg tcaatcctga agattcggcg 240  
aagctgacgg gcattttgaa ggccgggttg gacaagcagt ttcaaagggt tgagcccaac 300  
ccgcgctttg cctaccaagc cctgcccgtc aaactcgaat cgcccgccag ccagaatttc 360  
agtaccgaag gcctttgcct gcgctacgat accgacagac ctgccgacat cgccaagctg 420  
aaacagcttg agtttgaagc ggtcgaactc gacaatcgga ccatttacac gcgctgcgtc 480  
tccgccaag gcaaatacta cgccacaccg caaaaactga acgcccatta tcattttgag 540  
caaagtgtgc ctgccgatat ttattacacg gttacgaaaa aacataccga caaatccaag 600  
ttgtttgaaa atattgcata tacgcccacc acgttgatac tggatgcggg gggcgcggtg 660  
ctggccttgc ctgtcgcggc gttgattgca gccacgaatt cctcagacaa atga 714

<210> 160  
<211> 237  
<212> PRT  
<213> Neisseria meningitidis

<400> 160  
Met Leu Phe Arg Lys Thr Thr Ala Ala Val Leu Ala Ala Thr Leu Met  
1 5 10 15

Leu Asn Gly Cys Thr Val Met Met Trp Gly Met Asn Ser Pro Phe Ser  
20 25 30

Glu Thr Thr Ala Arg Lys His Val Asp Lys Asp Gln Ile Arg Ala Phe



35	40	45
Gly Val Val Ala Glu Asp Asn Ala Gln Leu Glu Lys Gly Ser Leu Val 50 55 60		
Met Met Gly Gly Lys Tyr Trp Phe Val Val Asn Pro Glu Asp Ser Ala 65 70 75 80		
Lys Leu Thr Gly Ile Leu Lys Ala Gly Leu Asp Lys Gln Phe Gln Met 85 90 95		
Val Glu Pro Asn Pro Arg Phe Ala Tyr Gln Ala Leu Pro Val Lys Leu 100 105 110		
Glu Ser Pro Ala Ser Gln Asn Phe Ser Thr Glu Gly Leu Cys Leu Arg 115 120 125		
Tyr Asp Thr Asp Arg Pro Ala Asp Ile Ala Lys Leu Lys Gln Leu Glu 130 135 140		
Phe Glu Ala Val Glu Leu Asp Asn Arg Thr Ile Tyr Thr Arg Cys Val 145 150 155 160		
Ser Ala Lys Gly Lys Tyr Tyr Ala Thr Pro Gln Lys Leu Asn Ala Asp 165 170 175		
Tyr His Phe Glu Gln Ser Val Pro Ala Asp Ile Tyr Tyr Thr Val Thr 180 185 190		
Lys Lys His Thr Asp Lys Ser Lys Leu Phe Glu Asn Ile Ala Tyr Thr 195 200 205		
Pro Thr Thr Leu Ile Leu Asp Ala Val Gly Ala Val Leu Ala Leu Pro 210 215 220		
Val Ala Ala Leu Ile Ala Ala Thr Asn Ser Ser Asp Lys 225 230 235		

<210> 161  
 <211> 714  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 161					
atgttggtcc	gtaaaacgac	cgccgcccgtt	ttggcgccgaa	ccttgatact	gaacggctgt 60
acgatgatgt	tgcgggggat	gaacaacccg	gtcagccaaa	caatcaccg	caaacacgtt 120
gacaaagacc	aaatccgcgc	cttcggtgtg	gttgccgaag	acaatgccca	attggaaaag 180
ggcagcctgg	tgatgatggg	cgggaaatac	tggttcgccg	tcaatcccga	agattcggcg 240
aagctgacgg	gccttttgaa	ggccgggttg	gacaagccct	tccaaatagt	tgaggatacc 300
ccgagctatg	cccgccacca	agccctgccg	gtcaaattcg	aagcgcccgg	cagccagaat 360
ttcagtaccg	gaggtccttg	cctgcgctat	gataccggca	gacctgacga	catcgccaag 420
ctgaaacagc	ttgagtttaa	agcgggtcaa	ctcgacaatc	ggaccattta	cacgcgctgc 480
gtatccgcca	aaggcaaata	ctacgccacg	ccgcaaaaac	tgaacgccga	ttatcatttt 540
gagcaaagtg	tgcccgccga	tatttattat	acggttactg	aaaaacatac	cgacaaatcc 600
aagctgtttg	gaaatatctt	atatacgccc	cccttggtga	tattggatgc	ggcggccgcg 660
gtgctggtct	tgcctatggc	tctgattgca	gccgcgaatt	cctcagacaa	atga 714

<210> 162  
<211> 237  
<212> PRT  
<213> Neisseria meningitidis

<400> 162  
Met Leu Phe Arg Lys Thr Thr Ala Ala Val Leu Ala Ala Thr Leu Ile  
1 5 10 15  
Leu Asn Gly Cys Thr Met Met Leu Arg Gly Met Asn Asn Pro Val Ser  
20 25 30  
Gln Thr Ile Thr Arg Lys His Val Asp Lys Asp Gln Ile Arg Ala Phe  
35 40 45  
Gly Val Val Ala Glu Asp Asn Ala Gln Leu Glu Lys Gly Ser Leu Val  
50 55 60  
Met Met Gly Gly Lys Tyr Trp Phe Ala Val Asn Pro Glu Asp Ser Ala  
65 70 75 80  
Lys Leu Thr Gly Leu Leu Lys Ala Gly Leu Asp Lys Pro Phe Gln Ile  
85 90 95  
Val Glu Asp Thr Pro Ser Tyr Ala Arg His Gln Ala Leu Pro Val Lys  
100 105 110  
Phe Glu Ala Pro Gly Ser Gln Asn Phe Ser Thr Gly Gly Leu Cys Leu  
115 120 125  
Arg Tyr Asp Thr Gly Arg Pro Asp Asp Ile Ala Lys Leu Lys Gln Leu  
130 135 140  
Glu Phe Lys Ala Val Lys Leu Asp Asn Arg Thr Ile Tyr Thr Arg Cys  
145 150 155 160  
Val Ser Ala Lys Gly Lys Tyr Tyr Ala Thr Pro Gln Lys Leu Asn Ala  
165 170 175  
Asp Tyr His Phe Glu Gln Ser Val Pro Ala Asp Ile Tyr Tyr Thr Val  
180 185 190  
Thr Glu Lys His Thr Asp Lys Ser Lys Leu Phe Gly Asn Ile Leu Tyr  
195 200 205  
Thr Pro Pro Leu Leu Ile Leu Asp Ala Ala Ala Ala Val Leu Val Leu  
210 215 220  
Pro Met Ala Leu Ile Ala Ala Ala Asn Ser Ser Asp Lys  
225 230 235

<210> 163  
<211> 374  
<212> DNA  
<213> Neisseria meningitidis

<400> 163  
gtcagtcctg tactgcctat tacacacgaa cggacagggt ttgaagggtg tateggttat 60  
gaaacccatt tttcagggca cggacatgaa gtacacagtc cgttcgatca tcatgattca 120  
aaaagcactt ctgatttcag cggcgggtgta gacggcgggt ttactgttta ccaacttcat 180  
cgaacatggt cggaaatcca tccggaggat gaatatgacg ggccgcaagc agcgattatc 240  
cgcccccgaggaggcaagg gatataataca gctattatgt caaaggaact tcaacaaaaa 300  
caaagactag tattgtccct caagcccat tttcagaccg ttggctagaa gaaaatgccg 360  
gtgccgcctc tggg 374

<210> 164  
<211> 125  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (79)..(79)  
<223> Xaa= any amino acid

<400> 164  
Val Ser Pro Val Leu Pro Ile Thr His Glu Arg Thr Gly Phe Glu Gly  
1 5 10 15  
Val Ile Gly Tyr Glu Thr His Phe Ser Gly His Gly His Glu Val His  
20 25 30  
Ser Pro Phe Asp His His Asp Ser Lys Ser Thr Ser Asp Phe Ser Gly  
35 40 45  
Gly Val Asp Gly Gly Phe Thr Val Tyr Gln Leu His Arg Thr Trp Ser  
50 55 60  
Glu Ile His Pro Glu Asp Glu Tyr Asp Gly Pro Gln Ala Ala Xaa Tyr  
65 70 75 80  
Pro Pro Pro Gly Gly Ala Arg Asp Ile Tyr Ser Tyr Tyr Val Lys Gly  
85 90 95  
Thr Ser Thr Lys Thr Lys Thr Ser Ile Val Pro Gln Ala Pro Phe Ser  
100 105 110  
Asp Arg Trp Leu Glu Glu Asn Ala Gly Ala Ala Ser Gly  
115 120 125

<210> 165  
<211> 1452  
<212> DNA  
<213> Neisseria meningitidis

<400> 165  
atgaatttgc ctattcaaaa attcatgatg ctgtttgcag cagcaatatc gttgctgcaa 60  
atccccatta gtcattgcgaa cgggtttggat gcccgtttgc gcgatgatat gcaggcaaaa 120  
cactacgaac cgggttggttaa ataccatctg tttggtaatg ctcgcggcag tgttaaaaag 180  
cgggttttacg ccgtccagac atttgatgca actgcgggtca gtcctgtact gcctattaca 240  
cacgaacgga cagggtttga aggtgttatc gggtatgaaa cccatttttc agggcacgga 300  
catgaagtac acagtccggt cgatcatcat gattcaaaaa gcacttctga tttcagcggc 360

ggtgtagacg	gcggttttac	tgtttaccaa	cttcacgaa	cagggtcgga	aatccatccg	420
gaggatggat	atgacgggcc	gcaaggcagc	gattatccgc	cccccgagg	agcaagggat	480
atatacagct	attatgtcaa	aggaacttca	acaaaaacaa	agactaatat	tgccccctcaa	540
gccccatttt	cagaccgttg	gctaaaagaa	aatgccggtg	ccgcctctgg	ttttttcagc	600
cgtgcgggatg	aagcaggaaa	actgatatgg	gaaagcgacc	ccaataaaaa	ttggtgggct	660
aaccgtatgg	atgatgttcg	cggcacgtc	caagggtcgg	ttaatccttt	tttaatgggt	720
tttcaaggag	tagggattgg	ggcaattaca	gacagtgcag	taagcccggg	cacagataca	780
gccgcgcagc	agactctaca	aggtattaat	gatttaggaa	aattaagtcc	ggaagcacia	840
cttgctgccg	cgagcctatt	acaggacagt	gcttttgccg	taaaagacgg	tatcaactct	900
gccaaacaat	gggctgatgc	ccatccaaat	ataacagcta	ctgcccacac	tgccctttcc	960
gcagcagagg	ccgcagggtac	ggtttgagaa	ggtaaaaaag	tagaacttaa	cccgaactaa	1020
tgggattggg	ttaaaaatac	cggttataaa	aaacctgctg	cccgcctaat	gcagacttta	1080
gatgggggaga	tggcagggtg	gaataaacct	attaactctt	taccacacag	tgccgctgaa	1140
aaaagaaaac	aaaattttga	gaagtttaat	agtaactgga	gttcagcaag	ttttgattca	1200
gtgcacaaaa	cactaactcc	caatgcacct	ggatttttaa	gtcctgataa	agttaaaact	1260
cgatacacta	gttttagatg	aaaaattaca	attataaaaag	ataacgaaaa	caactatttt	1320
agaatccatg	ataattcacg	aaaacagtat	cttgattcaa	atggtaatgc	tgtgaaaacc	1380
ggtaattttac	aaggtaagca	agcaaaaagat	tatttacaa	aacaaactca	tatcaggaac	1440
ttagacaaat	ga					1452

<210> 166  
 <211> 483  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 166

Met	Asn	Leu	Pro	Ile	Gln	Lys	Phe	Met	Met	Leu	Phe	Ala	Ala	Ala	Ile
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Ser	Leu	Leu	Gln	Ile	Pro	Ile	Ser	His	Ala	Asn	Gly	Leu	Asp	Ala	Arg
			20					25					30		
Leu	Arg	Asp	Asp	Met	Gln	Ala	Lys	His	Tyr	Glu	Pro	Gly	Gly	Lys	Tyr
			35				40					45			
His	Leu	Phe	Gly	Asn	Ala	Arg	Gly	Ser	Val	Lys	Lys	Arg	Val	Tyr	Ala
			50			55					60				
Val	Gln	Thr	Phe	Asp	Ala	Thr	Ala	Val	Ser	Pro	Val	Leu	Pro	Ile	Thr
					70					75				80	
His	Glu	Arg	Thr	Gly	Phe	Glu	Gly	Val	Ile	Gly	Tyr	Glu	Thr	His	Phe
				85				90						95	
Ser	Gly	His	Gly	His	Glu	Val	His	Ser	Pro	Phe	Asp	His	His	Asp	Ser
				100				105					110		
Lys	Ser	Thr	Ser	Asp	Phe	Ser	Gly	Gly	Val	Asp	Gly	Gly	Phe	Thr	Val
				115			120					125			
Tyr	Gln	Leu	His	Arg	Thr	Gly	Ser	Glu	Ile	His	Pro	Glu	Asp	Gly	Tyr
						135					140				
Asp	Gly	Pro	Gln	Gly	Ser	Asp	Tyr	Pro	Pro	Pro	Gly	Gly	Ala	Arg	Asp
145					150					155					160

Ile	Tyr	Ser	Tyr	Tyr	Val	Lys	Gly	Thr	Ser	Thr	Lys	Thr	Lys	Thr	Asn	165	170	175
Ile	Val	Pro	Gln	Ala	Pro	Phe	Ser	Asp	Arg	Trp	Leu	Lys	Glu	Asn	Ala	180	185	190
Gly	Ala	Ala	Ser	Gly	Phe	Phe	Ser	Arg	Ala	Asp	Glu	Ala	Gly	Lys	Leu	195	200	205
Ile	Trp	Glu	Ser	Asp	Pro	Asn	Lys	Asn	Trp	Trp	Ala	Asn	Arg	Met	Asp	210	215	220
Asp	Val	Arg	Gly	Ile	Val	Gln	Gly	Ala	Val	Asn	Pro	Phe	Leu	Met	Gly	225	230	235
Phe	Gln	Gly	Val	Gly	Ile	Gly	Ala	Ile	Thr	Asp	Ser	Ala	Val	Ser	Pro	245	250	255
Val	Thr	Asp	Thr	Ala	Ala	Gln	Gln	Thr	Leu	Gln	Gly	Ile	Asn	Asp	Leu	260	265	270
Gly	Lys	Leu	Ser	Pro	Glu	Ala	Gln	Leu	Ala	Ala	Ala	Ser	Leu	Leu	Gln	275	280	285
Asp	Ser	Ala	Phe	Ala	Val	Lys	Asp	Gly	Ile	Asn	Ser	Ala	Lys	Gln	Trp	290	295	300
Ala	Asp	Ala	His	Pro	Asn	Ile	Thr	Ala	Thr	Ala	Gln	Thr	Ala	Leu	Ser	305	310	315
Ala	Ala	Glu	Ala	Ala	Gly	Thr	Val	Trp	Arg	Gly	Lys	Lys	Val	Glu	Leu	325	330	335
Asn	Pro	Thr	Lys	Trp	Asp	Trp	Val	Lys	Asn	Thr	Gly	Tyr	Lys	Lys	Pro	340	345	350
Ala	Ala	Arg	His	Met	Gln	Thr	Leu	Asp	Gly	Glu	Met	Ala	Gly	Gly	Asn	355	360	365
Lys	Pro	Ile	Lys	Ser	Leu	Pro	Asn	Ser	Ala	Ala	Glu	Lys	Arg	Lys	Gln	370	375	380
Asn	Phe	Glu	Lys	Phe	Asn	Ser	Asn	Trp	Ser	Ser	Ala	Ser	Phe	Asp	Ser	385	390	395
Val	His	Lys	Thr	Leu	Thr	Pro	Asn	Ala	Pro	Gly	Ile	Leu	Ser	Pro	Asp	405	410	415
Lys	Val	Lys	Thr	Arg	Tyr	Thr	Ser	Leu	Asp	Gly	Lys	Ile	Thr	Ile	Ile	420	425	430
Lys	Asp	Asn	Glu	Asn	Asn	Tyr	Phe	Arg	Ile	His	Asp	Asn	Ser	Arg	Lys	435	440	445
Gln	Tyr	Leu	Asp	Ser	Asn	Gly	Asn	Ala	Val	Lys	Thr	Gly	Asn	Leu	Gln	450	455	460

Gly Lys Gln Ala Lys Asp Tyr Leu Gln Gln Gln Thr His Ile Arg Asn  
465 470 475 480

Leu Asp Lys

<210> 167  
<211> 1449  
<212> DNA  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (8)..(8)  
<223> N= Unknown

<220>  
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<222> (53)..(53)  
<223> N= Unknown

<220>  
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<222> (66)..(66)  
<223> N= Unknown

<220>  
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<222> (488)..(489)  
<223> N= Unknown

<220>  
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<222> (492)..(492)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (807)..(807)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (822)..(822)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (969)..(969)  
<223> N= Unknown

<220>  
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<222> (1041)..(1041)  
<223> N= Unknown

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<222> (1050)..(1050)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (1193)..(1197)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (1306)..(1306)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (1351)..(1351)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (1365)..(1365)  
<223> N= Unknown

<400> 167  
atgaattngc ctattcaaaa attcatgatg ctgtttgcag cagcaatatc gtngctgcaa 60  
atcccnatta gtcatgcgaa cggtttggat gcccgtttgc gcgatgatat gcaggcaaaa 120  
cactacgaac cgggtggtaa ataccatctg tttggtaatg ctcgcggcag tgtaaaaaat 180  
cgggtttacg ccgtccaaac atttgatgca actgcggtcg gcccatact gcctattaca 240  
cacgaacgga caggatttga aggcattatc ggttatgaaa cccatttttc aggacatgga 300  
catgaagtac acagtccgtt cgataatcat gattcaaaaa gcacttctga tttcagcggc 360  
ggcgtagacg gtggttttac cgtttaccaa cttcatcgga cagggtcgga aatccatccg 420  
gaggatggat atgacggggc gcaaggcagc gattatccgc cccccggagg agcaagggat 480  
atatacannt antatgtcaa aggaacttca acaaaaacaa agagtaatat tgttccccga 540  
gccccatttt cagaccgctg gctaaaagaa aatgccggtg ccgcctctgg ttttttcagc 600  
cgtgctgatg aagcaggaaa actgatatgg gaaagcgacc ccaataaaaa ttggtgggct 660  
aaccgtatgg atgatattcg cggcatcgtc caagggtcgg ttaatccttt tttaatgggt 720  
tttcaaggag tagggattgg ggcaattaca gacagtgcag taagcccggc cacagataca 780  
gccgcgcagc agactctaca aggtatnaat catttaggaa anttaagtcc cgaagcacia 840  
cttgcggtcg caaccgcatt acaagacagt gcttttgcgg taaaagacgg tatcaattcc 900  
gccagacaat gggctgatgc ccatccgaat ataactgcaa cagcccaaac tgcccttgcc 960  
gtagcagang ccgcaactac ggtttggggc ggtaaaaaag tagaacttaa cccgaccaa 1020  
tgggattggg ttaaaaatac nggctataa acacctgctg ttcgcaccat gcatactttg 1080  
gatggggaaa tggccggtgg gaatagaccg cctaaatcta taacgtccaa cagcaaagca 1140  
gatgcttcca cacaaccgtc tttaacaagc caactaattg gagaacaaat tannnnnggg 1200  
catgcttata acaagcatgt cataagacaa caagaattta cggatttaaa tatcaattca 1260  
ccagcagatt ttgctcggca tattgaaaat attgttagcc atccancaa tatgaaagag 1320  
ttacctcgcg gtagaactgc gtattgggat nataaaacag ggacnatagt tatccgagat 1380  
aaaaattctg acgatggagg tacagcattt agaccaacat caggtaaaaa atattatgat 1440  
gatttatag 1449

<210> 168  
<211> 482  
<212> PRT  
<213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> Xaa= any amino acid

<220>  
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 <222> (18)..(18)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (163)..(164)  
 <223> Xaa= any amino acid

<220>  
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 <222> (269)..(269)  
 <223> Xaa= any amino acid

<220>  
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 <222> (274)..(274)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (323)..(323)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (350)..(350)  
 <223> Xaa= any amino acid

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 <222> (398)..(399)  
 <223> Xaa= any amino acid

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 <221> misc\_feature  
 <222> (436)..(436)  
 <223> Xaa= any amino acid

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 <222> (451)..(451)  
 <223> Xaa= any amino acid

<400> 168  
 Met Asn Xaa Pro Ile Gln Lys Phe Met Met Leu Phe Ala Ala Ala Ile  
 1 5 10 15

Ser Xaa Leu Gln Ile Pro Ile Ser His Ala Asn Gly Leu Asp Ala Arg  
 20 25 30



Leu Arg Asp Asp Met Gln Ala Lys His Tyr Glu Pro Gly Gly Lys Tyr  
 35 40 45  
 His Leu Phe Gly Asn Ala Arg Gly Ser Val Lys Asn Arg Val Tyr Ala  
 50 55 60  
 Val Gln Thr Phe Asp Ala Thr Ala Val Gly Pro Ile Leu Pro Ile Thr  
 65 70 75 80  
 His Glu Arg Thr Gly Phe Glu Gly Ile Ile Gly Tyr Glu Thr His Phe  
 85 90 95  
 Ser Gly His Gly His Glu Val His Ser Pro Phe Asp Asn His Asp Ser  
 100 105 110  
 Lys Ser Thr Ser Asp Phe Ser Gly Gly Val Asp Gly Gly Phe Thr Val  
 115 120 125  
 Tyr Gln Leu His Arg Thr Gly Ser Glu Ile His Pro Glu Asp Gly Tyr  
 130 135 140  
 Asp Gly Pro Gln Gly Ser Asp Tyr Pro Pro Pro Gly Gly Ala Arg Asp  
 145 150 155 160  
 Ile Tyr Xaa Xaa Tyr Val Lys Gly Thr Ser Thr Lys Thr Lys Ser Asn  
 165 170 175  
 Ile Val Pro Arg Ala Pro Phe Ser Asp Arg Trp Leu Lys Glu Asn Ala  
 180 185 190  
 Gly Ala Ala Ser Gly Phe Phe Ser Arg Ala Asp Glu Ala Gly Lys Leu  
 195 200 205  
 Ile Trp Glu Ser Asp Pro Asn Lys Asn Trp Trp Ala Asn Arg Met Asp  
 210 215 220  
 Asp Ile Arg Gly Ile Val Gln Gly Ala Val Asn Pro Phe Leu Met Gly  
 225 230 235 240  
 Phe Gln Gly Val Gly Ile Gly Ala Ile Thr Asp Ser Ala Val Ser Pro  
 245 250 255  
 Val Thr Asp Thr Ala Ala Gln Gln Thr Leu Gln Gly Xaa Asn His Leu  
 260 265 270  
 Gly Xaa Leu Ser Pro Glu Ala Gln Leu Ala Ala Ala Thr Ala Leu Gln  
 275 280 285  
 Asp Ser Ala Phe Ala Val Lys Asp Gly Ile Asn Ser Ala Arg Gln Trp  
 290 295 300  
 Ala Asp Ala His Pro Asn Ile Thr Ala Thr Ala Gln Thr Ala Leu Ala  
 305 310 315 320  
 Val Ala Xaa Ala Ala Thr Thr Val Trp Gly Gly Lys Lys Val Glu Leu  
 325 330 335

Asn Pro Thr Lys Trp Asp Trp Val Lys Asn Thr Gly Tyr Xaa Thr Pro  
 340 345 350  
 Ala Val Arg Thr Met His Thr Leu Asp Gly Glu Met Ala Gly Gly Asn  
 355 360 365  
 Arg Pro Pro Lys Ser Ile Thr Ser Asn Ser Lys Ala Asp Ala Ser Thr  
 370 375 380  
 Gln Pro Ser Leu Gln Ala Gln Leu Ile Gly Glu Gln Ile Xaa Xaa Gly  
 385 390 395 400  
 His Ala Tyr Asn Lys His Val Ile Arg Gln Gln Glu Phe Thr Asp Leu  
 405 410 415  
 Asn Ile Asn Ser Pro Ala Asp Phe Ala Arg His Ile Glu Asn Ile Val  
 420 425 430  
 Ser His Pro Xaa Asn Met Lys Glu Leu Pro Arg Gly Arg Thr Ala Tyr  
 435 440 445  
 Trp Asp Xaa Lys Thr Gly Thr Ile Val Ile Arg Asp Lys Asn Ser Asp  
 450 455 460  
 Asp Gly Gly Thr Ala Phe Arg Pro Thr Ser Gly Lys Lys Tyr Tyr Asp  
 465 470 475 480

Asp Leu

<210> 169  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 169  
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8

<210> 170  
 <211> 468  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 170  
 Met Asn Leu Pro Ile Gln Lys Phe Met Met Leu Phe Ala Ala Ala Ile  
 1 5 10 15

Ser Leu Leu Gln Ile Pro Ile Ser His Ala Asn Gly Leu Asp Ala Arg  
 20 25 30

Leu Arg Asp Asp Met Gln Ala Lys His Tyr Glu Pro Gly Gly Lys Tyr

35					40					45					
His	Leu	Phe	Gly	Asn	Ala	Arg	Gly	Ser	Val	Lys	Asn	Arg	Val	Cys	Ala
50					55					60					
Val	Gln	Thr	Phe	Asp	Ala	Thr	Ala	Val	Gly	Pro	Ile	Leu	Pro	Ile	Thr
65					70					75					80
His	Glu	Arg	Thr	Gly	Phe	Glu	Gly	Val	Ile	Gly	Tyr	Glu	Thr	His	Phe
				85					90					95	
Ser	Gly	His	Gly	His	Glu	Val	His	Ser	Pro	Phe	Asp	Asn	His	Asp	Ser
			100					105					110		
Lys	Ser	Thr	Ser	Asp	Phe	Ser	Gly	Gly	Val	Asp	Gly	Gly	Phe	Thr	Val
			115				120					125			
Tyr	Gln	Leu	His	Arg	Thr	Gly	Ser	Glu	Ile	His	Pro	Glu	Asp	Gly	Tyr
	130					135					140				
Asp	Gly	Pro	Gln	Gly	Gly	Gly	Tyr	Pro	Pro	Pro	Gly	Gly	Ala	Arg	Asp
145				150					155						160
Ile	Tyr	Ser	Tyr	His	Ile	Lys	Gly	Thr	Ser	Thr	Lys	Thr	Lys	Ile	Asn
				165					170					175	
Thr	Val	Pro	Gln	Ala	Pro	Phe	Ser	Asp	Arg	Trp	Leu	Lys	Glu	Asn	Ala
			180					185					190		
Gly	Ala	Ala	Ser	Gly	Phe	Leu	Ser	Arg	Ala	Asp	Glu	Ala	Gly	Lys	Leu
	195						200					205			
Ile	Trp	Glu	Asn	Asp	Pro	Asp	Lys	Asn	Trp	Arg	Ala	Asn	Arg	Met	Asp
	210					215					220				
Asp	Ile	Arg	Gly	Ile	Val	Gln	Gly	Ala	Val	Asn	Pro	Phe	Leu	Thr	Gly
225				230						235					240
Phe	Gln	Gly	Leu	Gly	Val	Gly	Ala	Ile	Thr	Asp	Ser	Ala	Val	Ser	Pro
			245						250				255		
Val	Thr	Tyr	Ala	Ala	Ala	Arg	Lys	Thr	Leu	Gln	Gly	Ile	His	Asn	Leu
			260					265					270		
Gly	Asn	Leu	Ser	Pro	Glu	Ala	Gln	Leu	Ala	Ala	Ala	Thr	Ala	Leu	Gln
	275						280					285			
Asp	Ser	Ala	Phe	Ala	Val	Lys	Asp	Ser	Ile	Asn	Ser	Ala	Arg	Gln	Trp
	290					295					300				
Ala	Asp	Ala	His	Pro	Asn	Ile	Thr	Ala	Thr	Ala	Gln	Thr	Ala	Leu	Ala
305				310					315					320	
Val	Thr	Glu	Ala	Ala	Thr	Thr	Val	Trp	Gly	Gly	Lys	Lys	Val	Glu	Leu
			325						330					335	

Asn Pro Ala Lys Trp Asp Trp Val Lys Asn Thr Gly Tyr Lys Lys Pro  
 340 345 350

Ala Ala Arg His Met Gln Thr Val Asp Gly Glu Met Ala Gly Gly Asn  
 355 360 365

Lys Pro Leu Glu Ser Lys Asn Thr Val Thr Thr Asn Asn Phe Phe Glu  
 370 375 380

Asn Thr Gly Tyr Thr Glu Lys Val Leu Arg Gln Ala Ser Asn Gly Asp  
 385 390 395 400

Tyr His Gly Phe Pro Gln Ser Val Asp Ala Phe Ser Glu Asn Gly Thr  
 405 410 415

Val Ile Gln Ile Val Gly Gly Asp Asn Ile Val Arg His Lys Leu Tyr  
 420 425 430

Ile Pro Gly Ser Tyr Lys Gly Lys Asp Gly Asn Phe Glu Tyr Ile Arg  
 435 440 445

Glu Ala Asp Gly Lys Ile Asn His Arg Leu Phe Val Pro Asn Gln Gln  
 450 455 460

Leu Pro Glu Lys  
 465

<210> 171

<211> 1497

<212> DNA

<213> Neisseria gonorrhoeae

<400> 171

atgaatttgc	ctattcaaaa	attcatgatg	ctgttggcag	cggcaatatc	gatgctgcat	60
atccccatta	gtcatgcgaa	cggtttggat	gcccgtttgc	gcgatgatat	gcaggcaaaa	120
cactacgaac	cgggtggcaa	ataccatctg	tttggtaatg	ctcgcggcag	tggttaaaaat	180
cgggtttgcg	ccgtccaaac	atttgatgca	actgcggtcg	gccccatact	gcctattaca	240
cacgaacgga	caggatttga	aggtgttatc	ggctatgaaa	cccatTTTTc	aggacacgga	300
cacgaagtac	acagtccgtt	cgataatcat	gattcaaaaa	gcacttctga	tttcagcggc	360
ggcgtagacg	gcggttttac	cgtttaccaa	cttcatcgga	cagggtcgga	aatacatccc	420
gcagacggat	atgacggggc	tcaaggcggc	ggttatccgg	aaccacaagg	ggcaagggat	480
atatacagct	accatatcaa	aggaacttca	acaaaaacaa	agataaacac	tgttccgcaa	540
gccccttttt	cagaccgctg	gctaaaagaa	aatgccggtg	ccgcttccgg	ttttctcagc	600
cgtgcggatg	aagcaggaaa	actgatatgg	gaaaacgacc	ccgataaaaa	ttggcgggct	660
aaccgtatgg	atgatattcg	cggcatcgtc	caaggtgcgg	ttaatccttt	tttaacgggt	720
tttcaagggg	tagggattgg	ggcaattaca	gacagtgcgg	taagcccggg	cacagataca	780
gccgctcagc	agactctaca	aggtattaat	gatttaggaa	atttaagtcc	ggaagcacia	840
cttgccgccg	cgagcctatt	acaggacagt	gcctttgcgg	taaaagacgg	catcaattcc	900
gccagacaat	gggctgatgc	ccatccgaat	ataacagcaa	cagcccaaac	tgcccttgcc	960
gtagcagagg	ccgcaggtac	ggtttggcgc	ggtaaaaaag	tagaacttaa	cccgaccaaa	1020
tgggattggg	ttaaaaatac	cggctataaa	aaacctgctg	cccgccatat	gcagactgta	1080
gatggggaga	tggcaggggg	gaatagaccg	cctaaatcta	taacgtcgga	aggaaaagct	1140
aatgctgcaa	cctatcctaa	gttggttaat	cagctaaatg	agcaaaactt	aaataacatt	1200
gcggctcaag	atccaagatt	gagtctagct	attcatgagg	gtaaaaaaaa	ttttccaata	1260
ggaactgcaa	cttatgaaga	ggcagataga	ctaggtaaaa	tttgggttgg	tgagggtgca	1320
agacaaaacta	gtggaggcgg	atggttaagt	agagatggca	ctcgacaata	tcggccacca	1380

acagaaaaaa aatcacaatt tgcaactaca ggtattcaag caaattttga aacttatact 1440  
 attgattcaa atgaaaaaag aaataaaaatt aaaaatggac atttaaatat taggtaa 1497

<210> 172  
 <211> 498  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 172  
 Met Asn Leu Pro Ile Gln Lys Phe Met Met Leu Leu Ala Ala Ala Ile  
 1 5 10 15  
 Ser Met Leu His Ile Pro Ile Ser His Ala Asn Gly Leu Asp Ala Arg  
 20 25 30  
 Leu Arg Asp Asp Met Gln Ala Lys His Tyr Glu Pro Gly Gly Lys Tyr  
 35 40 45  
 His Leu Phe Gly Asn Ala Arg Gly Ser Val Lys Asn Arg Val Cys Ala  
 50 55 60  
 Val Gln Thr Phe Asp Ala Thr Ala Val Gly Pro Ile Leu Pro Ile Thr  
 65 70 75 80  
 His Glu Arg Thr Gly Phe Glu Gly Val Ile Gly Tyr Glu Thr His Phe  
 85 90 95  
 Ser Gly His Gly His Glu Val His Ser Pro Phe Asp Asn His Asp Ser  
 100 105 110  
 Lys Ser Thr Ser Asp Phe Ser Gly Gly Val Asp Gly Gly Phe Thr Val  
 115 120 125  
 Tyr Gln Leu His Arg Thr Gly Ser Glu Ile His Pro Ala Asp Gly Tyr  
 130 135 140  
 Asp Gly Pro Gln Gly Gly Gly Tyr Pro Glu Pro Gln Gly Ala Arg Asp  
 145 150 155 160  
 Ile Tyr Ser Tyr His Ile Lys Gly Thr Ser Thr Lys Thr Lys Ile Asn  
 165 170 175  
 Thr Val Pro Gln Ala Pro Phe Ser Asp Arg Trp Leu Lys Glu Asn Ala  
 180 185 190  
 Gly Ala Ala Ser Gly Phe Leu Ser Arg Ala Asp Glu Ala Gly Lys Leu  
 195 200 205  
 Ile Trp Glu Asn Asp Pro Asp Lys Asn Trp Arg Ala Asn Arg Met Asp  
 210 215 220  
 Asp Ile Arg Gly Ile Val Gln Gly Ala Val Asn Pro Phe Leu Thr Gly  
 225 230 235 240  
 Phe Gln Gly Val Gly Ile Gly Ala Ile Thr Asp Ser Ala Val Ser Pro  
 245 250 255

Val Thr Asp Thr Ala Ala Gln Gln Thr Leu Gln Gly Ile Asn Asp Leu  
 260 265 270  
 Gly Asn Leu Ser Pro Glu Ala Gln Leu Ala Ala Ala Ser Leu Leu Gln  
 275 280 285  
 Asp Ser Ala Phe Ala Val Lys Asp Gly Ile Asn Ser Ala Arg Gln Trp  
 290 295 300  
 Ala Asp Ala His Pro Asn Ile Thr Ala Thr Ala Gln Thr Ala Leu Ala  
 305 310 315 320  
 Val Ala Glu Ala Ala Gly Thr Val Trp Arg Gly Lys Lys Val Glu Leu  
 325 330 335  
 Asn Pro Thr Lys Trp Asp Trp Val Lys Asn Thr Gly Tyr Lys Lys Pro  
 340 345 350  
 Ala Ala Arg His Met Gln Thr Val Asp Gly Glu Met Ala Gly Gly Asn  
 355 360 365  
 Arg Pro Pro Lys Ser Ile Thr Ser Glu Gly Lys Ala Asn Ala Ala Thr  
 370 375 380  
 Tyr Pro Lys Leu Val Asn Gln Leu Asn Glu Gln Asn Leu Asn Asn Ile  
 385 390 395 400  
 Ala Ala Gln Asp Pro Arg Leu Ser Leu Ala Ile His Glu Gly Lys Lys  
 405 410 415  
 Asn Phe Pro Ile Gly Thr Ala Thr Tyr Glu Glu Ala Asp Arg Leu Gly  
 420 425 430  
 Lys Ile Trp Val Gly Glu Gly Ala Arg Gln Thr Ser Gly Gly Gly Trp  
 435 440 445  
 Leu Ser Arg Asp Gly Thr Arg Gln Tyr Arg Pro Pro Thr Glu Lys Lys  
 450 455 460  
 Ser Gln Phe Ala Thr Thr Gly Ile Gln Ala Asn Phe Glu Thr Tyr Thr  
 465 470 475 480  
 Ile Asp Ser Asn Glu Lys Arg Asn Lys Ile Lys Asn Gly His Leu Asn  
 485 490 495

Ile Arg

<210> 173  
 <211> 126  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 173  
 atgaaaaaac aaatcaccgc agccgtaatg atgctgtcta tgattgcccc cgcaatggca 60  
 aacggcttgg acaatcaggc atttgaagac caaatgttcc acacgcgggc agatgcaccg 120

<210> 174  
 <211> 42  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 174  
 Met Lys Lys Gln Ile Thr Ala Ala Val Met Met Leu Ser Met Ile Ala  
 1 5 10 15  
 Pro Ala Met Ala Asn Gly Leu Asp Asn Gln Ala Phe Glu Asp Gln Met  
 20 25 30  
 Phe His Thr Arg Ala Asp Ala Pro Met Gln  
 35 40

<210> 175  
 <211> 546  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 175  
 atgaaaaaac aaatcacgc agccgtaatg atgctgtcta tgattgcccc cgcaatggca 60  
 aacggcttgg acaatcaggc atttgaagac caagtgttcc acacgcgggc agatgcaccg 120  
 atgcagttgg cggagctttc tcaaaaggag atgaaggaga cagagggggc gtttcttcca 180  
 ttggctatct tgggtggtgc tgccattggg atgtggacac agcatggttt tagttatgca 240  
 acgacaggca gaccagcttc tgttagagat gttgctattg ctggcggatt aggcgcaatt 300  
 cctggtggtg taggcgccgc aggaaagggt gtttcctttg ctaaataatg acgtgagatt 360  
 aaaatcggca ataatatgcg gatagcccct ttcggtaata gaacagggtca tcctattgga 420  
 aaatttcccc attatcatcg tcgagttacg gataatacgg gcaagacttt gcctggacag 480  
 ggaattggtc gtcacgcgcc ttgggaatca aaatctacgg acagatcatg gaaaaaccgc 540  
 ttctaa 546

<210> 176  
 <211> 181  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 176  
 Met Lys Lys Gln Ile Thr Ala Ala Val Met Met Leu Ser Met Ile Ala  
 1 5 10 15  
 Pro Ala Met Ala Asn Gly Leu Asp Asn Gln Ala Phe Glu Asp Gln Val  
 20 25 30  
 Phe His Thr Arg Ala Asp Ala Pro Met Gln Leu Ala Glu Leu Ser Gln  
 35 40 45  
 Lys Glu Met Lys Glu Thr Glu Gly Ala Phe Leu Pro Leu Ala Ile Leu  
 50 55 60  
 Gly Gly Ala Ala Ile Gly Met Trp Thr Gln His Gly Phe Ser Tyr Ala  
 65 70 75 80  
 Thr Thr Gly Arg Pro Ala Ser Val Arg Asp Val Ala Ile Ala Gly Gly

85

90

95

Leu Gly Ala Ile Pro Gly Gly Val Gly Ala Ala Gly Lys Val Val Ser  
 100 105 110

Phe Ala Lys Tyr Gly Arg Glu Ile Lys Ile Gly Asn Asn Met Arg Ile  
 115 120 125

Ala Pro Phe Gly Asn Arg Thr Gly His Pro Ile Gly Lys Phe Pro His  
 130 135 140

Tyr His Arg Arg Val Thr Asp Asn Thr Gly Lys Thr Leu Pro Gly Gln  
 145 150 155 160

Gly Ile Gly Arg His Arg Pro Trp Glu Ser Lys Ser Thr Asp Arg Ser  
 165 170 175

Trp Lys Asn Arg Phe  
 180

<210> 177  
 <211> 546  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (159)..(159)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (164)..(164)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (185)..(185)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (308)..(308)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (420)..(420)  
 <223> N= Unknown

<400> 177  
 atgaaaaaac aaatcaccgc agccgtaatg atgctgtcta tgattgcccc cgcaatggca 60  
 aacggcttgg acaatcaggc atttgaagac caagtgttcc acacgcgggc agatgcaccg 120  
 atgcagttgg cggagctttc tcaaaaggag atgaaggana cagngggggc gtttcttcca 180  
 ttgntatct tgggtggtgc tgccattggt atgtggacac agcatggttt tagttatgca 240  
 acgacaggca gaccagcttc tgtagagat gttgctattg ctggcggatt aggcgaatt 300



cctggtgntg taggcgccgc aggaaagggtt gtttcctttg ctaaatatgg acgtgagatt	360
aaaatcggca ataatatgcg gatagccctt ttcggtaata gaacagggtca tcctattggn	420
aaatttcccc attatcatcg tcgagttacg gataatacgg gcaagacttt gcctggacag	480
ggaattggtc gtcatcgccc ttgggaatca aaatctacgg acagatcatg gaaaaaccgc	540
ttctaa	546

<210> 178  
 <211> 181  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (53)..(53)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (55)..(55)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (62)..(62)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (103)..(103)  
 <223> Xaa= any amino acid

<400> 178  
 Met Lys Lys Gln Ile Thr Ala Ala Val Met Met Leu Ser Met Ile Ala  
 1 5 10 15  
 Pro Ala Met Ala Asn Gly Leu Asp Asn Gln Ala Phe Glu Asp Gln Val  
 20 25 30  
 Phe His Thr Arg Ala Asp Ala Pro Met Gln Leu Ala Glu Leu Ser Gln  
 35 40 45  
 Lys Glu Met Lys Xaa Thr Xaa Gly Ala Phe Leu Pro Leu Xaa Ile Leu  
 50 55 60  
 Gly Gly Ala Ala Ile Gly Met Trp Thr Gln His Gly Phe Ser Tyr Ala  
 65 70 75 80  
 Thr Thr Gly Arg Pro Ala Ser Val Arg Asp Val Ala Ile Ala Gly Gly  
 85 90 95  
 Leu Gly Ala Ile Pro Gly Xaa Val Gly Ala Ala Gly Lys Val Val Ser  
 100 105 110  
 Phe Ala Lys Tyr Gly Arg Glu Ile Lys Ile Gly Asn Asn Met Arg Ile  
 115 120 125

Ala Pro Phe Gly Asn Arg Thr Gly His Pro Ile Gly Lys Phe Pro His  
130 135 140

Tyr His Arg Arg Val Thr Asp Asn Thr Gly Lys Thr Leu Pro Gly Gln  
145 150 155 160

Gly Ile Gly Arg His Arg Pro Trp Glu Ser Lys Ser Thr Asp Arg Ser  
165 170 175

Trp Lys Asn Arg Phe  
180

<210> 179  
<211> 540  
<212> DNA  
<213> Neisseria meningitidis

<400> 179  
atgaaaaaac aaatcaccgc agccgtaatg atgctgtcta tgatcgcccc cgcaatggca 60  
aacggattgg acaatcaggc atttgaagac caagtgttcc acacgcgggc agatgcgccg 120  
atgcagttgg cggagctttc tcagaaggag atgaaggaga ctgaaggggc ttttcttcca 180  
ttggctatct tgggtggtgc tgccattggt atgtggacac agcatgggtt tagttatgca 240  
acgacaggca gaccagcttc tgtagagat gttgctggcg gattaggcgc aattcctggt 300  
gatgtagggt ctgcaggaaa gggtgtttcc tttgctaaat atggacgtga gattaaaatc 360  
ggcaataata tgcgtagatc ccctttcggg aatagaacag gtcacacctat tggaaaattt 420  
ccccattatc atcgctcgagt tacggataat acgggcaaga ctttgcctgg acagggaatt 480  
ggtcgctcatc gcccttggga atcaaaatct acggacagat catggaaaaa ccgcttctaa 540

<210> 180  
<211> 179  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 180  
Met Lys Lys Gln Ile Thr Ala Ala Val Met Met Leu Ser Met Ile Ala  
1 5 10 15  
Pro Ala Met Ala Asn Gly Leu Asp Asn Gln Ala Phe Glu Asp Gln Val  
20 25 30  
Phe His Thr Arg Ala Asp Ala Pro Met Gln Leu Ala Glu Leu Ser Gln  
35 40 45  
Lys Glu Met Lys Glu Thr Glu Gly Ala Phe Leu Pro Leu Ala Ile Leu  
50 55 60  
Gly Gly Ala Ala Ile Gly Met Trp Thr Gln His Gly Phe Ser Tyr Ala  
65 70 75 80  
Thr Thr Gly Arg Pro Ala Ser Val Arg Asp Val Ala Gly Gly Leu Gly  
85 90 95  
Ala Ile Pro Gly Asp Val Gly Ala Ala Gly Lys Val Val Ser Phe Ala  
100 105 110  
Lys Tyr Gly Arg Glu Ile Lys Ile Gly Asn Asn Met Arg Ile Ala Pro

115

120

125

Phe Gly Asn Arg Thr Gly His Pro Ile Gly Lys Phe Pro His Tyr His  
 130 135 140

Arg Arg Val Thr Asp Asn Thr Gly Lys Thr Leu Pro Gly Gln Gly Ile  
 145 150 155 160

Gly Arg His Arg Pro Trp Glu Ser Lys Ser Thr Asp Arg Ser Trp Lys  
 165 170 175

Asn Arg Phe

<210> 181

<211> 251

<212> DNA

<213> Neisseria meningitidis

<400> 181

atgaataaaa ctctctatcg tgtaattttc aaccgcaaac gtggggctgt grtagccggt 60  
 gctgaaacta ccaagcgcga aggtaaaagc tgtgccgata gtgattcagg cagcgctcat 120  
 gtgaaatctg ttccttttgg tactactcat gcacctgttt gtgcgttaca aatatctttt 180  
 ctttttcttt attgggcttt tctttatggt tggctgtagg tacggycaat attgcttttg 240  
 ctgatggcat t 251

<210> 182

<211> 84

<212> PRT

<213> Neisseria meningitidis

<220>

<221> misc\_feature

<222> (18)..(18)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (55)..(55)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (76)..(76)

<223> Xaa= any amino acid

<400> 182

Met Asn Lys Thr Leu Tyr Arg Val Ile Phe Asn Arg Lys Arg Gly Ala  
 1 5 10 15

Val Xaa Ala Val Ala Glu Thr Thr Lys Arg Glu Gly Lys Ser Cys Ala  
 20 25 30

Asp Ser Asp Ser Gly Ser Ala His Val Lys Ser Val Pro Phe Gly Thr  
 35 40 45

Thr His Ala Pro Val Cys Xaa Val Thr Asn Ile Phe Ser Phe Ser Leu  
50 55 60

Leu Gly Phe Ser Leu Cys Leu Ala Val Gly Thr Xaa Asn Ile Ala Phe  
65 70 75 80

Ala Asp Gly Ile

<210> 183  
<211> 249  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 183  
atgaataaaa ctctctatcg tgtaattttc aaccgcaaac gtggggctgt ggtagccggt 60  
gctgaaacta ccaagcgcca aggtaaaagc tgtgccgata gtgattcagg cagcgctcat 120  
gtgaaatctg ttctttttgg tactactcat gcacctgttt gtcgttcaaa tatcttttct 180  
ttttctttat tgggcttttc tttatgtttg gctgtaggta cggccaatat tgcttttgct 240  
gatggcatt 249

<210> 184  
<211> 83  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 184  
Met Asn Lys Thr Leu Tyr Arg Val Ile Phe Asn Arg Lys Arg Gly Ala  
1 5 10 15

Val Val Ala Val Ala Glu Thr Thr Lys Arg Glu Gly Lys Ser Cys Ala  
20 25 30

Asp Ser Asp Ser Gly Ser Ala His Val Lys Ser Val Pro Phe Gly Thr  
35 40 45

Thr His Ala Pro Val Cys Arg Ser Asn Ile Phe Ser Phe Ser Leu Leu  
50 55 60

Gly Phe Ser Leu Cys Leu Ala Val Gly Thr Ala Asn Ile Ala Phe Ala  
65 70 75 80

Asp Gly Ile

<210> 185  
<211> 792  
<212> PRT  
<213> *Neisseria gonorrhoeae*

<400> 185  
Ala Thr Gly Ala Ala Cys Ala Ala Ala Cys Cys Cys Thr Cys Thr  
1 5 10 15

Ala Thr Cys Gly Thr Gly Thr Gly Ala Thr Thr Thr Thr Cys Ala Ala  
20 25 30

Cys	Cys	Gly	Cys	Ala	Ala	Ala	Cys	Gly	Cys	Gly	Gly	Thr	Gly	Cys	Thr	35	40	45
Gly	Thr	Gly	Gly	Thr	Ala	Gly	Cys	Thr	Gly	Thr	Thr	Gly	Cys	Cys	Gly	50	55	60
Ala	Ala	Ala	Cys	Cys	Ala	Cys	Cys	Ala	Ala	Gly	Cys	Gly	Cys	Gly	Ala	65	70	75
Ala	Gly	Gly	Thr	Ala	Ala	Ala	Ala	Gly	Cys	Thr	Gly	Thr	Gly	Cys	Cys	85	90	95
Gly	Ala	Thr	Ala	Gly	Thr	Gly	Gly	Thr	Thr	Cys	Gly	Gly	Gly	Cys	Ala	100	105	110
Gly	Cys	Gly	Thr	Thr	Thr	Ala	Thr	Gly	Thr	Gly	Ala	Ala	Ala	Thr	Cys	115	120	125
Cys	Gly	Thr	Thr	Thr	Cys	Thr	Thr	Thr	Cys	Ala	Thr	Thr	Cys	Cys	Thr	130	135	140
Ala	Cys	Thr	Cys	Ala	Thr	Thr	Cys	Cys	Ala	Ala	Ala	Gly	Cys	Cys	Thr	145	150	155
Thr	Thr	Thr	Gly	Thr	Thr	Thr	Thr	Thr	Cys	Thr	Gly	Cys	Ala	Thr	Thr	165	170	175
Ala	Gly	Gly	Cys	Thr	Thr	Thr	Thr	Cys	Thr	Thr	Thr	Ala	Thr	Gly	Thr	180	185	190
Thr	Thr	Gly	Gly	Cys	Thr	Thr	Thr	Gly	Gly	Gly	Thr	Ala	Cys	Gly	Gly	195	200	205
Thr	Cys	Ala	Ala	Thr	Ala	Thr	Thr	Gly	Cys	Thr	Thr	Thr	Thr	Gly	Cys	210	215	220
Thr	Gly	Ala	Cys	Gly	Gly	Cys	Ala	Thr	Thr	Ala	Thr	Thr	Ala	Cys	Thr	225	230	235
Gly	Ala	Thr	Ala	Ala	Ala	Gly	Cys	Thr	Gly	Cys	Thr	Cys	Cys	Thr	Ala	245	250	255
Ala	Ala	Ala	Cys	Cys	Cys	Ala	Ala	Cys	Ala	Ala	Gly	Cys	Cys	Ala	Cys	260	265	270
Gly	Ala	Thr	Thr	Cys	Thr	Gly	Cys	Ala	Ala	Ala	Cys	Ala	Gly	Gly	Thr	275	280	285
Ala	Ala	Cys	Gly	Gly	Cys	Ala	Thr	Ala	Cys	Cys	Gly	Cys	Ala	Ala	Gly	290	295	300
Thr	Cys	Ala	Ala	Thr	Ala	Thr	Thr	Cys	Ala	Ala	Ala	Cys	Cys	Cys	Cys	305	310	315
Thr	Ala	Cys	Thr	Thr	Cys	Gly	Gly	Cys	Ala	Gly	Gly	Gly	Gly	Thr	Thr	325	330	335

Thr Cys Thr Gly Thr Thr Ala Ala Thr Cys Ala Ala Thr Ala Thr Gly	340	345	350
Cys Cys Cys Ala Gly Thr Thr Thr Gly Ala Thr Gly Thr Gly Gly Gly	355	360	365
Thr Ala Ala Thr Cys Gly Cys Gly Gly Gly Gly Cys Gly Ala Thr Thr	370	375	380
Thr Thr Ala Ala Ala Cys Ala Ala Cys Ala Gly Thr Cys Gly Cys Ala	385	390	395
Gly Cys Ala Ala Cys Ala Cys Cys Cys Ala Ala Ala Cys Ala Cys Ala	405	410	415
Gly Cys Thr Ala Gly Gly Cys Gly Gly Thr Thr Gly Gly Ala Thr Thr	420	425	430
Cys Ala Ala Gly Gly Cys Ala Ala Thr Cys Cys Thr Thr Gly Gly Thr	435	440	445
Thr Gly Ala Cys Ala Ala Gly Gly Gly Gly Cys Gly Ala Ala Gly Cys	450	455	460
Ala Cys Gly Thr Gly Thr Gly Gly Thr Thr Gly Thr Ala Ala Ala Cys	465	470	475
Cys Ala Ala Ala Thr Cys Ala Ala Cys Ala Gly Cys Ala Gly Cys Cys	485	490	495
Ala Thr Cys Cys Thr Thr Cys Ala Cys Ala Ala Cys Thr Gly Ala Ala	500	505	510
Thr Gly Gly Cys Thr Ala Thr Ala Thr Thr Gly Ala Ala Gly Thr Gly	515	520	525
Gly Gly Thr Gly Gly Ala Cys Gly Ala Cys Gly Thr Gly Cys Ala Gly	530	535	540
Ala Ala Gly Thr Cys Gly Thr Thr Ala Thr Thr Gly Cys Cys Ala Ala	545	550	555
Thr Cys Cys Gly Gly Cys Ala Gly Gly Gly Ala Thr Thr Gly Cys Ala	565	570	575
Gly Thr Cys Ala Ala Thr Gly Gly Thr Gly Gly Thr Gly Gly Thr Thr	580	585	590
Thr Thr Ala Thr Cys Ala Ala Thr Gly Cys Thr Thr Cys Cys Cys Gly	595	600	605
Thr Gly Cys Cys Ala Cys Thr Thr Thr Gly Ala Cys Gly Ala Cys Ala	610	615	620
Gly Gly Cys Cys Ala Ala Cys Cys Gly Cys Ala Ala Thr Ala Thr Cys	625	630	635
			640

Ala Ala Gly Cys Ala Gly Gly Ala Gly Ala Cys Thr Thr Thr Ala Gly  
645 650 655

Cys Gly Gly Cys Thr Thr Thr Ala Ala Gly Ala Thr Ala Ala Gly Gly  
660 665 670

Cys Ala Ala Gly Gly Cys Ala Ala Thr Gly Cys Thr Gly Thr Ala Ala  
675 680 685

Thr Cys Gly Cys Cys Gly Gly Ala Cys Ala Cys Gly Gly Thr Thr Thr  
690 695 700

Gly Gly Ala Thr Gly Cys Cys Cys Gly Thr Gly Ala Thr Ala Cys Cys  
705 710 715 720

Gly Ala Thr Thr Thr Cys Ala Cys Ala Cys Gly Thr Ala Thr Thr Cys  
725 730 735

Thr Thr Gly Thr Ala Thr Gly Cys Cys Ala Ala Cys Ala Ala Ala Ala  
740 745 750

Thr Cys Ala Cys Cys Thr Thr Gly Ala Thr Cys Ala Gly Thr Ala Cys  
755 760 765

Gly Gly Cys Cys Gly Ala Ala Cys Ala Ala Gly Cys Ala Gly Gly Cys  
770 775 780

Ala Thr Thr Cys Gly Thr Ala Ala  
785 790

<210> 186  
<211> 263  
<212> PRT  
<213> *Neisseria gonorrhoeae*

<400> 186  
Met Asn Lys Thr Leu Tyr Arg Val Ile Phe Asn Arg Lys Arg Gly Ala  
1 5 10 15

Val Val Ala Val Ala Glu Thr Thr Lys Arg Glu Gly Lys Ser Cys Ala  
20 25 30

Asp Ser Gly Ser Gly Ser Val Tyr Val Lys Ser Val Ser Phe Ile Pro  
35 40 45

Thr His Ser Lys Ala Phe Cys Phe Ser Ala Leu Gly Phe Ser Leu Cys  
50 55 60

Leu Ala Leu Gly Thr Val Asn Ile Ala Phe Ala Asp Gly Ile Ile Thr  
65 70 75 80

Asp Lys Ala Ala Pro Lys Thr Gln Gln Ala Thr Ile Leu Gln Thr Gly  
85 90 95

Asn Gly Ile Pro Gln Val Asn Ile Gln Thr Pro Thr Ser Ala Gly Val  
100 105 110

Ser Val Asn Gln Tyr Ala Gln Phe Asp Val Gly Asn Arg Gly Ala Ile  
 115 120 125  
 Leu Asn Asn Ser Arg Ser Asn Thr Gln Thr Gln Leu Gly Gly Trp Ile  
 130 135 140  
 Gln Gly Asn Pro Trp Leu Thr Arg Gly Glu Ala Arg Val Val Val Asn  
 145 150 155 160  
 Gln Ile Asn Ser Ser His Pro Ser Gln Leu Asn Gly Tyr Ile Glu Val  
 165 170 175  
 Gly Gly Arg Arg Ala Glu Val Val Ile Ala Asn Pro Ala Gly Ile Ala  
 180 185 190  
 Val Asn Gly Gly Gly Phe Ile Asn Ala Ser Arg Ala Thr Leu Thr Thr  
 195 200 205  
 Gly Gln Pro Gln Tyr Gln Ala Gly Asp Phe Ser Gly Phe Lys Ile Arg  
 210 215 220  
 Gln Gly Asn Ala Val Ile Ala Gly His Gly Leu Asp Ala Arg Asp Thr  
 225 230 235 240  
 Asp Phe Thr Arg Ile Leu Val Cys Gln Gln Asn His Leu Asp Gln Tyr  
 245 250 255  
 Gly Arg Thr Ser Arg His Ser  
 260

<210> 187  
 <211> 243  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 187  
 atgaatactc ctcccttttgt ctgttggatt ttttgcaagg tcatcgacaa tttcggcgac 60  
 atcggcggtt cgtggcggct cgcccggtgt ttgcaccgag aactcgggtg gcaggtgcat 120  
 ttgtggacgg acgatgtgtc cgccttgctg gcgctttgcc ctgatttgcc cgatgttccc 180  
 tgcgttcacg aggatattca tgtccgcact tggcattccg atgcggcaga tattgatacc 240  
 gcg 243

<210> 188  
 <211> 81  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 188  
 Met Asn Thr Pro Pro Phe Val Cys Trp Ile Phe Cys Lys Val Ile Asp  
 1 5 10 15  
 Asn Phe Gly Asp Ile Gly Val Ser Trp Arg Leu Ala Arg Val Leu His  
 20 25 30  
 Arg Glu Leu Gly Trp Gln Val His Leu Trp Thr Asp Asp Val Ser Ala  
 35 40 45



Leu Arg Ala Leu Cys Pro Asp Leu Pro Asp Val Pro Cys Val His Gln  
50 55 60

Asp Ile His Val Arg Thr Trp His Ser Asp Ala Ala Asp Ile Asp Thr  
65 70 75 80

Ala

<210> 189  
<211> 1149  
<212> DNA  
<213> Neisseria meningitidis

<400> 189  
atgaatactc ctccttttgt ctgttggatt ttttgcaagg tcatcgacaa tttcggcgac 60  
atcggcggtt cgtggcggct cgcccgtgtt ttgcaccgag aactcggttg gcaggtgcat 120  
ttgtggacgg acgatgtgtc cgccttgctg gcgctttgcc ctgatttgcc cgatgttccc 180  
tgcgttcatc aggatattca tgtccgcact tggcattccg atgcggcaga tattgatacc 240  
gcgcctgttc ccgatgtcgt catcgaaact tttgcctgag acctgcccga aaatgtgctg 300  
cacattatcc gccgacacaa gccgcttttg ctgaattggg aatatttgag cgcggaggaa 360  
agcaatgaaa ggctgcatct gatgccttcg ccgcaggagg gtgttcaaaa atatttttgg 420  
tttatgggtt tcagcgaaaa aagcggcggg ttgatacgcg aacgtgatta ctgcgaagcc 480  
gtccgtttcg atactgaagc cctgcgagag cggtgatgc tgcccga aaaacgcctcc 540  
gaatggctgc ttttcggcta tcggagcgat gtttgggcaa agtggctgga aatgtggcga 600  
caggcaggca gccgatgac actgttgctg gcggggacgc aaatcatcga cagcctcaaa 660  
caaagcggcg ttattccgca agatgccctg caaaacgacg gcgatgtttt tcagacggca 720  
tccgtccgcc tcgtcaaaat ccctttcgtg ccgcaacagg acttcgacca actgctgcac 780  
cttgccgact gcgccgtcat ccgcggcgaa gacagtttcg tgccgcgcca gcttgcgggc 840  
aaacccttct tttggcacat ctaccgcaa gacgagaatg tccatctcga caaactccac 900  
gccttttggg ataaggcaca cggtttctac acgcccga aa cgtgtcggc acaccgccgt 960  
ctttcggacg acctcaacgg cggagaggct ttatccgcaa cacaacgcct cgaatgttgg 1020  
caaaccctgc aacaacatca aaacggctgg cggcaaggcg cggaggattg gagccgttat 1080  
cttttcggcg agccgtcagc tcctgaaaaa ctgcgtgcct ttgtttcaaa gcatcaaaaa 1140  
atacgctag 1149

<210> 190  
<211> 383  
<212> PRT  
<213> Neisseria meningitidis

<400> 190  
Met Asn Thr Pro Pro Phe Val Cys Trp Ile Phe Cys Lys Val Ile Asp  
1 5 10 15  
Asn Phe Gly Asp Ile Gly Val Ser Trp Arg Leu Ala Arg Val Leu His  
20 25 30  
Arg Glu Leu Gly Trp Gln Val His Leu Trp Thr Asp Asp Val Ser Ala  
35 40 45  
Leu Arg Ala Leu Cys Pro Asp Leu Pro Asp Val Pro Cys Val His Gln  
50 55 60  
Asp Ile His Val Arg Thr Trp His Ser Asp Ala Ala Asp Ile Asp Thr  
65 70 75 80

Ala	Pro	Val	Pro	Asp	Val	Val	Ile	Glu	Thr	Phe	Ala	Cys	Asp	Leu	Pro	85	90	95
Glu	Asn	Val	Leu	His	Ile	Ile	Arg	Arg	His	Lys	Pro	Leu	Trp	Leu	Asn	100	105	110
Trp	Glu	Tyr	Leu	Ser	Ala	Glu	Glu	Ser	Asn	Glu	Arg	Leu	His	Leu	Met	115	120	125
Pro	Ser	Pro	Gln	Glu	Gly	Val	Gln	Lys	Tyr	Phe	Trp	Phe	Met	Gly	Phe	130	135	140
Ser	Glu	Lys	Ser	Gly	Gly	Leu	Ile	Arg	Glu	Arg	Asp	Tyr	Cys	Glu	Ala	145	150	155
Val	Arg	Phe	Asp	Thr	Glu	Ala	Leu	Arg	Glu	Arg	Leu	Met	Leu	Pro	Glu	165	170	175
Lys	Asn	Ala	Ser	Glu	Trp	Leu	Leu	Phe	Gly	Tyr	Arg	Ser	Asp	Val	Trp	180	185	190
Ala	Lys	Trp	Leu	Glu	Met	Trp	Arg	Gln	Ala	Gly	Ser	Pro	Met	Thr	Leu	195	200	205
Leu	Leu	Ala	Gly	Thr	Gln	Ile	Ile	Asp	Ser	Leu	Lys	Gln	Ser	Gly	Val	210	215	220
Ile	Pro	Gln	Asp	Ala	Leu	Gln	Asn	Asp	Gly	Asp	Val	Phe	Gln	Thr	Ala	225	230	235
Ser	Val	Arg	Leu	Val	Lys	Ile	Pro	Phe	Val	Pro	Gln	Gln	Asp	Phe	Asp	245	250	255
Gln	Leu	Leu	His	Leu	Ala	Asp	Cys	Ala	Val	Ile	Arg	Gly	Glu	Asp	Ser	260	265	270
Phe	Val	Arg	Ala	Gln	Leu	Ala	Gly	Lys	Pro	Phe	Phe	Trp	His	Ile	Tyr	275	280	285
Pro	Gln	Asp	Glu	Asn	Val	His	Leu	Asp	Lys	Leu	His	Ala	Phe	Trp	Asp	290	295	300
Lys	Ala	His	Gly	Phe	Tyr	Thr	Pro	Glu	Thr	Val	Ser	Ala	His	Arg	Arg	305	310	315
Leu	Ser	Asp	Asp	Leu	Asn	Gly	Gly	Glu	Ala	Leu	Ser	Ala	Thr	Gln	Arg	325	330	335
Leu	Glu	Cys	Trp	Gln	Thr	Leu	Gln	Gln	His	Gln	Asn	Gly	Trp	Arg	Gln	340	345	350
Gly	Ala	Glu	Asp	Trp	Ser	Arg	Tyr	Leu	Phe	Gly	Gln	Pro	Ser	Ala	Pro	355	360	365
Glu	Lys	Leu	Ala	Ala	Phe	Val	Ser	Lys	His	Gln	Lys	Ile	Arg	Trp		370	375	380

<210> 191  
<211> 1149  
<212> DNA  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (28)..(28)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (179)..(179)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (251)..(251)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (336)..(336)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (360)..(360)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (379)..(379)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (407)..(407)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (414)..(414)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (439)..(441)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (536)..(536)  
<223> N= Unknown

<220>

<221> misc\_feature  
<222> (633)..(633)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (642)..(642)  
<223> N= Unknown

<400> 191  
atgaatactc ctcctttttc tgctggantt ttttgcaagg tcatcgacaa tttcggcgac 60  
atcggcggtt cgtggcgggt tgcccgtgtt ttgcaccgag aactcgggtg gcagggtgat 120  
ttgtggacgg acgatgtgtc cgccttgctg gcgctttgcc ctgatttgcc cgatgttcnc 180  
tgcgttcatc aggatattca tgtccgcact tggcattccg atgcggcaga tattgatacc 240  
gcgcctgttc ncgatgtcgt catcgaaact tttgcctgcg acctgcccga aaatgtgctg 300  
cacatcatcc gccgacacaa gccgcttttg ctgaantggg aatatttgag cgcggaggan 360  
agcaatgaaa ggctgcacnt gatgccttcg ccgcaggaga gtgttcnaaa atanttttgg 420  
tttatgggtt tcagcgaann naggcggcga ctgatacgcg aacgcgatta ctgcgaagcc 480  
gtccgtttcg atagcggagc cttgcgcaag aggetgatgc tccccgaaaa aaacgncccc 540  
gaatggctgc ttttcggcta tcggagcgat gtttgggcaa agtggctgga aatgtggcga 600  
caggcaggca gtccgttgac acttttgctg gcnggggccc anattatcga cagcctcaaa 660  
caaaacggcg ttattccgca agatgccctg caaaacgacg gcgatgtttt tcagacggca 720  
tccgtccgcc tcgtcaaaat ccctttcgtg ccgcaacagg acttcgacaa actgctgcac 780  
cttgccgact gcgcgcgtcat ccgcggcgaa gacagtttcg tgcgcgcccc gcttgcgggc 840  
aaacccttct tttggcacat ctaccgcgaa gatgagaatg tccatctcga caaactccac 900  
gccttttggg ataaggcaca cggtttctac acgcccgaag ccgcacgcgc acaccgcgcg 960  
ctttcagacg acctcaacgg cggagaggct ttatccgcaa cacaacgcct cgaatgttgg 1020  
caaatcctgc aacaacatca aaacggctgg cggcaaggcg cggaggattg gagccgttat 1080  
ctttttgggc agccttcgcg atccgaaaaa ctgcgcgcct ttgtttcaaa gcataaaaaa 1140  
atacgctag 1149

<210> 192  
<211> 382  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (10)..(10)  
<223> Xaa= Unknown

<220>  
<221> misc\_feature  
<222> (60)..(60)  
<223> Xaa= Unknown

<220>  
<221> misc\_feature  
<222> (84)..(84)  
<223> Xaa= Unknown

<220>  
<221> misc\_feature  
<222> (112)..(112)  
<223> Xaa= Unknown

<220>  
 <221> misc\_feature  
 <222> (120)..(120)  
 <223> Xaa= Unknown

<220>  
 <221> misc\_feature  
 <222> (127)..(127)  
 <223> Xaa= Unknown

<220>  
 <221> misc\_feature  
 <222> (136)..(136)  
 <223> Xaa= Unknown

<220>  
 <221> misc\_feature  
 <222> (138)..(138)  
 <223> Xaa= Unknown

<220>  
 <221> misc\_feature  
 <222> (147)..(147)  
 <223> Xaa= Unknown

<220>  
 <221> misc\_feature  
 <222> (179)..(179)  
 <223> Xaa= Unknown

<220>  
 <221> misc\_feature  
 <222> (214)..(214)  
 <223> Xaa= Unknown

<400> 192  
 Met Asn Thr Pro Pro Phe Ser Ala Gly Xaa Phe Cys Lys Val Ile Asp  
 1 5 10 15  
 Asn Phe Gly Asp Ile Gly Val Ser Trp Arg Leu Ala Arg Val Leu His  
 20 25 30  
 Arg Glu Leu Gly Trp Gln Val His Leu Trp Thr Asp Asp Val Ser Ala  
 35 40 45  
 Leu Arg Ala Leu Cys Pro Asp Leu Pro Asp Val Xaa Cys Val His Gln  
 50 55 60  
 Asp Ile His Val Arg Thr Trp His Ser Asp Ala Ala Asp Ile Asp Thr  
 65 70 75 80  
 Ala Pro Val Xaa Asp Val Val Ile Glu Thr Phe Ala Cys Asp Leu Pro  
 85 90 95  
 Glu Asn Val Leu His Ile Ile Arg Arg His Lys Pro Leu Trp Leu Xaa  
 100 105 110

Trp Glu Tyr Leu Ser Ala Glu Xaa Ser Asn Glu Arg Leu His Xaa Met  
 115 120 125  
 Pro Ser Pro Gln Glu Ser Val Xaa Lys Xaa Phe Trp Phe Met Gly Phe  
 130 135 140  
 Ser Glu Xaa Ser Gly Gly Leu Ile Arg Glu Arg Asp Tyr Cys Glu Ala  
 145 150 155 160  
 Val Arg Phe Asp Ser Gly Ala Leu Arg Lys Arg Leu Met Leu Pro Glu  
 165 170 175  
 Lys Asn Xaa Pro Glu Trp Leu Leu Phe Gly Tyr Arg Ser Asp Val Trp  
 180 185 190  
 Ala Lys Trp Leu Glu Met Trp Arg Gln Ala Gly Ser Pro Leu Thr Leu  
 195 200 205  
 Leu Leu Ala Gly Ala Xaa Ile Ile Asp Ser Leu Lys Gln Asn Gly Val  
 210 215 220  
 Ile Pro Gln Asp Ala Leu Gln Asn Asp Gly Asp Val Phe Gln Thr Ala  
 225 230 235 240  
 Ser Val Arg Leu Val Lys Ile Pro Phe Val Pro Gln Gln Asp Phe Asp  
 245 250 255  
 Lys Leu Leu His Leu Ala Asp Cys Ala Val Ile Arg Gly Glu Asp Ser  
 260 265 270  
 Phe Val Arg Ala Gln Leu Ala Gly Lys Pro Phe Phe Trp His Ile Tyr  
 275 280 285  
 Pro Gln Asp Glu Asn Val His Leu Asp Lys Leu His Ala Phe Trp Asp  
 290 295 300  
 Lys Ala His Gly Phe Tyr Thr Pro Glu Thr Ala Ser Ala His Arg Arg  
 305 310 315 320  
 Leu Ser Asp Asp Leu Asn Gly Gly Glu Ala Leu Ser Ala Thr Gln Arg  
 325 330 335  
 Leu Glu Cys Trp Gln Ile Leu Gln Gln His Gln Asn Gly Trp Arg Gln  
 340 345 350  
 Gly Ala Glu Asp Trp Ser Arg Tyr Leu Phe Gly Gln Pro Ser Ala Ser  
 355 360 365  
 Glu Lys Leu Ala Ala Phe Val Ser Lys His Gln Lys Ile Arg  
 370 375 380

<210> 193  
 <211> 8  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 193  
 nnnnnnnn

8

<210> 194  
 <211> 345  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 194  
 Met Val Met Asn Thr Tyr Ala Phe Pro Val Cys Trp Ile Phe Cys Lys  
 1 5 10 15  
 Val Ile Asp Asn Phe Gly Asp Ile Gly Val Ser Trp Arg Leu Ala Arg  
 20 25 30  
 Val Leu His Arg Glu Leu Gly Trp Gln Val His Leu Trp Thr Asp Asp  
 35 40 45  
 Val Ser Ala Leu Arg Ala Leu Cys Pro Asp Leu Pro Asp Val Pro Phe  
 50 55 60  
 Val His Gln Asp Ile His Val Arg Thr Trp His Ser Asp Ala Ala Asp  
 65 70 75 80  
 Ile Asp Thr Ala Pro Val Pro Asp Ala Val Ile Glu Thr Phe Ala Cys  
 85 90 95  
 Asp Leu Pro Glu Asn Val Leu Asn Ile Ile Arg Arg His Lys Pro Leu  
 100 105 110  
 Trp Leu Asn Trp Glu Tyr Leu Ser Ala Glu Glu Ser Asn Glu Arg Leu  
 115 120 125  
 His Leu Met Pro Ser Pro Gln Glu Gly Val Gln Lys Tyr Phe Trp Phe  
 130 135 140  
 Met Gly Phe Ser Glu Lys Ser Gly Gly Leu Ile Arg Glu Arg Asp Tyr  
 145 150 155 160  
 Arg Glu Ala Val Arg Phe Asp Thr Glu Ala Leu Arg Arg Arg Leu Val  
 165 170 175  
 Leu Pro Glu Lys Asn Ala Pro Glu Trp Leu Leu Phe Gly Tyr Arg Gly  
 180 185 190  
 Asp Val Trp Ala Lys Trp Leu Asp Met Trp Gln Gln Ala Gly Ser Leu  
 195 200 205  
 Met Thr Leu Leu Leu Ala Gly Ala Gln Ile Ile Asp Ser Leu Lys Gln  
 210 215 220

Ser Gly Val Ile Pro Gln Asn Ala Leu Gln Asn Glu Gly Gly Val Phe  
 225 230 235 240  
 Gln Thr Ala Ser Val Arg Leu Val Lys Ile Pro Phe Val Pro Gln Gln  
 245 250 255  
 Asp Phe Asp Lys Leu Leu His Leu Ala Asp Cys Ala Val Ile Arg Gly  
 260 265 270  
 Glu Asp Ser Phe Val Arg Thr Gln Leu Ala Gly Lys Pro Phe Phe Trp  
 275 280 285  
 His Ile Tyr Pro Gln Asp Glu Asn Val His Leu Asp Lys Leu His Ala  
 290 295 300  
 Phe Trp Asp Lys Ala Tyr Gly Phe Tyr Thr Pro Glu Thr Ala Ser Val  
 305 310 315 320  
 His Arg Leu Leu Ser Asp Asp Leu Asn Gly Gly Glu Ala Leu Ser Ala  
 325 330 335  
 Thr Gln Arg Leu Glu Cys Gly Val Leu  
 340 345

<210> 195  
 <211> 1152  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 195  
 Ala Thr Gly Ala Ala Thr Ala Cys Ala Thr Ala Cys Gly Cys Thr Thr  
 1 5 10 15  
 Thr Thr Cys Cys Thr Gly Thr Cys Thr Gly Thr Thr Gly Gly Ala Thr  
 20 25 30  
 Thr Thr Thr Thr Thr Gly Cys Ala Ala Gly Gly Thr Cys Ala Thr Cys  
 35 40 45  
 Gly Ala Cys Ala Ala Thr Thr Thr Cys Gly Gly Cys Gly Ala Cys Ala  
 50 55 60  
 Thr Cys Gly Gly Cys Gly Thr Thr Thr Cys Gly Thr Gly Gly Cys Gly  
 65 70 75 80  
 Gly Cys Thr Cys Gly Cys Cys Cys Gly Thr Gly Thr Thr Thr Thr Gly  
 85 90 95  
 Cys Ala Cys Cys Gly Cys Gly Ala Ala Cys Thr Cys Gly Gly Thr Thr  
 100 105 110  
 Gly Gly Cys Ala Gly Gly Thr Gly Cys Ala Thr Thr Thr Gly Thr Gly  
 115 120 125  
 Gly Ala Cys Gly Gly Ala Cys Gly Ala Cys Gly Thr Gly Thr Cys Cys  
 130 135 140



Gly Cys Cys Thr Thr	Gly Cys Gly Cys Gly Cys Gly Cys Thr Thr Thr	145	150	155	160
Gly Thr Cys Cys Cys	Gly Ala Thr Thr Thr Gly Cys Cys Cys Gly Ala	165	170	175	
Thr Gly Thr Thr	Cys Cys Cys Thr Thr Cys Gly Thr Thr Cys Ala Thr	180	185	190	
Cys Ala Gly Gly Ala Thr Ala Thr Thr Cys Ala Thr Gly Thr Cys Cys		195	200	205	
Gly Cys Ala Cys Thr Thr Gly Gly Cys Ala Thr Thr Cys Cys Gly Ala		210	215	220	
Thr Gly Cys Gly Gly Cys Ala Gly Ala Cys Ala Thr Thr Gly Ala Thr		225	230	235	240
Ala Cys Cys Gly Cys Gly Cys Cys Cys Gly Thr Thr Cys Cys Cys Gly		245	250	255	
Ala Thr Gly Cys Cys Gly Thr Thr Ala Thr Cys Gly Ala Ala Ala Cys		260	265	270	
Thr Thr Thr Thr Gly Cys Cys Thr Gly Cys Gly Ala Cys Cys Thr Gly		275	280	285	
Cys Cys Cys Gly Ala Ala Ala Ala Thr Gly Thr Gly Cys Thr Gly Ala		290	295	300	
Ala Cys Ala Thr Cys Ala Thr Cys Cys Gly Cys Cys Gly Ala Cys Ala		305	310	315	320
Cys Ala Ala Ala Cys Cys Gly Cys Thr Thr Thr Gly Gly Cys Thr Gly		325	330	335	
Ala Ala Thr Thr Gly Gly Gly Ala Ala Thr Ala Thr Thr Thr Gly Ala		340	345	350	
Gly Cys Gly Cys Gly Gly Ala Gly Gly Ala Ala Ala Gly Cys Ala Ala		355	360	365	
Thr Gly Ala Ala Ala Gly Gly Cys Thr Gly Cys Ala Cys Cys Thr Gly		370	375	380	
Ala Thr Gly Cys Cys Thr Thr Cys Gly Cys Cys Gly Cys Ala Gly Gly		385	390	395	400
Ala Gly Gly Gly Cys Gly Thr Thr Cys Ala Ala Ala Ala Thr Ala		405	410	415	
Thr Thr Thr Thr Thr Gly Gly Thr Thr Thr Ala Thr Gly Gly Gly Thr		420	425	430	
Thr Thr Cys Ala Gly Cys Gly Ala Ala Ala Ala Ala Gly Cys Gly		435	440	445	

Gly Cys Gly Gly Gly Thr Thr Gly Ala Thr Ala Cys Gly Cys Gly Ala	450	455	460
Ala Cys Gly Cys Gly Ala Thr Thr Ala Cys Cys Gly Cys Gly Ala Ala	465	470	475 480
Gly Cys Cys Gly Thr Cys Cys Gly Thr Thr Thr Cys Gly Ala Thr Ala		485	490 495
Cys Cys Gly Ala Ala Gly Cys Cys Cys Thr Gly Cys Gly Cys Cys Gly		500	505 510
Gly Cys Gly Gly Cys Thr Gly Gly Thr Gly Cys Thr Gly Cys Cys Cys		515	520 525
Gly Ala Ala Ala Ala Ala Ala Ala Cys Gly Cys Cys Cys Cys Gly		530	535 540
Ala Ala Thr Gly Gly Cys Thr Gly Cys Thr Thr Thr Thr Cys Gly Gly		545	550 555 560
Cys Thr Ala Thr Cys Gly Gly Gly Gly Cys Gly Ala Thr Gly Thr Thr		565	570 575
Thr Gly Gly Gly Cys Ala Ala Ala Gly Thr Gly Gly Cys Thr Gly Gly		580	585 590
Ala Cys Ala Thr Gly Thr Gly Gly Cys Ala Ala Cys Ala Gly Gly Cys		595	600 605
Ala Gly Gly Cys Ala Gly Cys Cys Thr Gly Ala Thr Gly Ala Cys Cys		610	615 620
Cys Thr Ala Cys Thr Gly Cys Thr Gly Gly Cys Gly Gly Gly Gly Gly		625	630 635 640
Cys Gly Cys Ala Ala Ala Thr Thr Ala Thr Cys Gly Ala Cys Ala Gly		645	650 655
Cys Cys Thr Cys Ala Ala Ala Cys Ala Ala Ala Gly Cys Gly Gly Cys		660	665 670
Gly Thr Thr Ala Thr Thr Cys Cys Gly Cys Ala Ala Ala Ala Cys Gly		675	680 685
Cys Cys Cys Thr Gly Cys Ala Ala Ala Ala Thr Gly Ala Ala Gly Gly		690	695 700
Cys Gly Gly Thr Gly Thr Cys Thr Thr Thr Cys Ala Gly Ala Cys Gly		705	710 715 720
Gly Cys Ala Thr Cys Cys Gly Thr Cys Cys Gly Cys Cys Thr Thr Gly		725	730 735
Thr Cys Ala Ala Ala Ala Thr Cys Cys Cys Gly Thr Thr Cys Gly Thr		740	745 750

Gly Cys Cys Gly Cys Ala Ala Cys Ala Gly Gly Ala Cys Thr Thr Cys  
 755 760 765  
 Gly Ala Cys Ala Ala Ala Thr Thr Gly Cys Thr Gly Cys Ala Cys Cys  
 770 775 780  
 Thr Cys Gly Cys Cys Gly Ala Cys Thr Gly Cys Gly Cys Cys Gly Thr  
 785 790 795 800  
 Gly Ala Thr Ala Cys Gly Cys Gly Gly Cys Gly Ala Ala Gly Ala Cys  
 805 810 815  
 Ala Gly Thr Thr Thr Cys Gly Thr Gly Cys Gly Thr Ala Cys Cys Cys  
 820 825 830  
 Ala Gly Cys Thr Thr Gly Cys Cys Gly Gly Ala Ala Ala Ala Cys Cys  
 835 840 845  
 Cys Thr Thr Thr Thr Thr Thr Thr Gly Gly Cys Ala Cys Ala Thr Cys  
 850 855 860  
 Thr Ala Cys Cys Cys Gly Cys Ala Ala Gly Ala Cys Gly Ala Gly Ala  
 865 870 875 880  
 Ala Thr Gly Thr Cys Cys Ala Thr Cys Thr Cys Gly Ala Cys Ala Ala  
 885 890 895  
 Ala Cys Thr Cys Cys Ala Cys Gly Cys Cys Thr Thr Thr Thr Gly Gly  
 900 905 910  
 Gly Ala Thr Ala Ala Gly Gly Cys Ala Thr Ala Cys Gly Gly Cys Thr  
 915 920 925  
 Thr Cys Thr Ala Cys Ala Cys Gly Cys Cys Cys Gly Ala Ala Ala Cys  
 930 935 940  
 Cys Gly Cys Ala Thr Cys Gly Gly Thr Gly Cys Ala Cys Cys Gly Cys  
 945 950 955 960  
 Cys Thr Cys Cys Thr Thr Thr Cys Gly Gly Ala Cys Gly Ala Cys Cys  
 965 970 975  
 Thr Cys Ala Ala Cys Gly Gly Cys Gly Gly Ala Gly Ala Gly Gly Cys  
 980 985 990  
 Thr Thr Thr Ala Thr Cys Cys Gly Cys Ala Ala Cys Ala Cys Ala Ala  
 995 1000 1005  
 Cys Gly Cys Cys Thr Cys Gly Ala Ala Thr Gly Thr Thr Gly Gly  
 1010 1015 1020  
 Cys Ala Ala Ala Cys Cys Cys Thr Gly Cys Ala Ala Cys Ala Ala  
 1025 1030 1035  
 Cys Ala Thr Cys Ala Ala Ala Ala Cys Gly Gly Cys Thr Gly Gly  
 1040 1045 1050

Cys Gly Gly Cys Ala Ala Gly Gly Cys Gly Cys Gly Gly Ala Gly  
 1055 1060 1065  
 Gly Ala Thr Thr Gly Gly Ala Gly Cys Cys Gly Thr Thr Ala Thr  
 1070 1075 1080  
 Cys Thr Thr Thr Thr Cys Gly Gly Gly Cys Ala Gly Cys Cys Thr  
 1085 1090 1095  
 Thr Cys Cys Gly Cys Ala Thr Cys Cys Gly Ala Ala Ala Ala Ala  
 1100 1105 1110  
 Cys Thr Cys Gly Cys Cys Gly Cys Cys Thr Thr Thr Gly Thr Thr  
 1115 1120 1125  
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 1130 1135 1140  
 Ala Thr Ala Cys Gly Cys Thr Ala Gly  
 1145 1150

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 <212> PRT  
 <213> Neisseria meningitidis

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 His Arg Glu Leu Gly Trp Gln Val His Leu Trp Thr Asp Asp Val Ser  
 35 40 45  
 Ala Leu Arg Ala Leu Cys Pro Asp Leu Pro Asp Val Pro Phe Val His  
 50 55 60  
 Gln Asp Ile His Val Arg Thr Trp His Ser Asp Ala Ala Asp Ile Asp  
 65 70 75 80  
 Thr Ala Pro Val Pro Asp Ala Val Ile Glu Thr Phe Ala Cys Asp Leu  
 85 90 95  
 Pro Glu Asn Val Leu Asn Ile Ile Arg Arg His Lys Pro Leu Trp Leu  
 100 105 110  
 Asn Trp Glu Tyr Leu Ser Ala Glu Glu Ser Asn Glu Arg Leu His Leu  
 115 120 125  
 Met Pro Ser Pro Gln Glu Gly Val Gln Lys Tyr Phe Trp Phe Met Gly  
 130 135 140  
 Phe Ser Glu Lys Ser Gly Gly Leu Ile Arg Glu Arg Asp Tyr Arg Glu  
 145 150 155 160

Ala	Val	Arg	Phe	Asp	Thr	Glu	Ala	Leu	Arg	Arg	Arg	Leu	Val	Leu	Pro			
				165					170					175				
Glu	Lys	Asn	Ala	Pro	Glu	Trp	Leu	Leu	Phe	Gly	Tyr	Arg	Gly	Asp	Val			
			180					185						190				
Trp	Ala	Lys	Trp	Leu	Asp	Met	Trp	Gln	Gln	Ala	Gly	Ser	Leu	Met	Thr			
		195					200					205						
Leu	Leu	Leu	Ala	Gly	Ala	Gln	Ile	Ile	Asp	Ser	Leu	Lys	Gln	Ser	Gly			
	210					215					220							
Val	Ile	Pro	Gln	Asn	Ala	Leu	Gln	Asn	Glu	Gly	Gly	Val	Phe	Gln	Thr			
225					230					235					240			
Ala	Ser	Val	Arg	Leu	Val	Lys	Ile	Pro	Phe	Val	Pro	Gln	Gln	Asp	Phe			
				245					250					255				
Asp	Lys	Leu	Leu	His	Leu	Ala	Asp	Cys	Ala	Val	Ile	Arg	Gly	Glu	Asp			
		260						265					270					
Ser	Phe	Val	Arg	Thr	Gln	Leu	Ala	Gly	Lys	Pro	Phe	Phe	Trp	His	Ile			
		275				280						285						
Tyr	Pro	Gln	Asp	Glu	Asn	Val	His	Leu	Asp	Lys	Leu	His	Ala	Phe	Trp			
	290					295					300							
Asp	Lys	Ala	Tyr	Gly	Phe	Tyr	Thr	Pro	Glu	Thr	Ala	Ser	Val	His	Arg			
305					310					315					320			
Leu	Leu	Ser	Asp	Asp	Leu	Asn	Gly	Gly	Glu	Ala	Leu	Ser	Ala	Thr	Gln			
			325						330					335				
Arg	Leu	Glu	Cys	Trp	Gln	Thr	Leu	Gln	Gln	His	Gln	Asn	Gly	Trp	Arg			
			340					345					350					
Gln	Gly	Ala	Glu	Asp	Trp	Ser	Arg	Tyr	Leu	Phe	Gly	Gln	Pro	Ser	Ala			
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<220>  
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 tacgttgga aatagncgca acgtcgca gacctgtggct ctgcacgctg ctcggaatgc 180  
 tgggtgtcgg attgttgctg cttttggtgc ggcaatatac gttcaactgg gaaagcacgc 240  
 tgttgagcaa tgccgcttcg gtacgcgcgg tggaaatgtt ggcatggctg ccgtcgaaac 300  
 tcggtttccc tgtccccgat gcgcggtcgg tcatcgaagg ccgtctgaac ggcaatattg 360  
 ccgatgcgcg ggcttggtcg gggctgctgg tcgncagtat cgcttgctan ggcatcctgc 420  
 cgcgcctg 428

<210> 198  
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 <213> Neisseria meningitidis

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 <223> Xaa= any amino acid

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 <223> Xaa= any amino acid

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<223> Xaa= any amino acid

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Trp Phe Arg Xaa Lys Asp Pro Val Asn Gln Ala Val Leu Arg Leu Tyr  
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Xaa Asp Glu Trp Arg Xaa Thr Ser Val Arg Trp Lys Ile Xaa Ala Thr  
35 40 45

Ser His Ser Leu Trp Leu Cys Thr Leu Leu Gly Met Leu Val Ser Val  
50 55 60

Leu Leu Leu Leu Leu Val Arg Gln Tyr Thr Phe Asn Trp Glu Ser Thr  
65 70 75 80

Leu Leu Ser Asn Ala Ala Ser Val Arg Ala Val Glu Met Leu Ala Trp  
85 90 95

Leu Pro Ser Lys Leu Gly Phe Pro Val Pro Asp Ala Arg Ser Val Ile  
100 105 110

Glu Gly Arg Leu Asn Gly Asn Ile Ala Asp Ala Arg Ala Trp Ser Gly  
115 120 125

Leu Leu Val Xaa Ser Ile Ala Cys Xaa Gly Ile Leu Pro Arg Leu  
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<210> 199  
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<213> Neisseria meningitidis

<400> 199

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gaggaaaaaaa	tcatccgtcg	ggcggagatg	attgacagga	accgtatgct	gcgggagacg	180
ttggaacgtg	tgcgtgcggg	gtcgttcttg	ttgtgggtgg	tggcggcgac	gtttgcattt	240
tttaccgggt	tttcagtcac	ttatcttcta	atggacaatc	agggtctgaa	tttctttttg	300
gtttttggcgg	gcgtgttg	catgaatacg	ctgatgctgg	cagtatggtt	ggcaatgttg	360
ttcctgcgtg	tgaaaagtggg	gcgttttttc	agcagtcagg	cgacgtgggt	tcggggcaaa	420
gacctgttaa	atcaggcggt	gttgcggtg	tatgcggacg	agtggcggca	accttcggta	480
cgttggaaaa	taggcgcaac	gtcgcacagc	ctgtggctct	gcacgtgct	cggaatgctg	540
gtgtcggtat	tggtgctgct	ttgggtgcgg	caatatacgt	tcaactggga	aagcacgctg	600
ttgagcaatg	ccgcttcggt	acgcgcgggtg	gaaatgttgg	catggctgcc	gtcgaaactc	660
ggtttccttg	tccccgatgc	gcgggcggtc	atcgaaggcc	gtctgaacgg	caatattgcc	720
gatgcgcggg	cttggtcggg	gctgctggtc	ggcagtatcg	cctgctacgg	catcctgccg	780

cgctgctgg	cttgggtagt	gtgtaaaatc	cttttgaaaa	caagcgaaaa	cggattggat	840
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gatacgcgtc	gggaaaccgt	gtccgccgtt	tcaccgaaaa	tcattctgaa	cgatgcgccg	960
aaatgggagg	tcattgctga	gaccgagtg	caggacggcg	aatgggttcga	gggcaggctg	1020
gcgcaggaat	ggctggataa	ggcggttgcc	accaatcggg	aacagggttc	cgcgctggag	1080
acagagctga	agcagaaacc	ggcgcaactg	cttatcgggc	tgcgcgcccc	aactgtgccg	1140
gaccgcggcg	tggtgcggca	gattgtccga	ctctcggaag	cggcgagggg	cggcgagggtg	1200
gtgcagcttt	tggcggaaca	ggggctttca	gacgaccttt	cggaaaagct	ggaacattgg	1260
cgtaacgcgc	tggccgaatg	cggcgcgggc	tggcttgagc	ctgacagggc	ggcgagggaa	1320
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 <211> 446  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 200

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			20					25						30	
Leu	Arg	Arg	Val	Asp	Gly	Ser	Thr	Glu	Glu	Lys	Ile	Ile	Arg	Arg	Ala
			35				40						45		
Glu	Met	Ile	Asp	Arg	Asn	Arg	Met	Leu	Arg	Glu	Thr	Leu	Glu	Arg	Val
	50					55					60				
Arg	Ala	Gly	Ser	Phe	Trp	Leu	Trp	Val	Val	Ala	Ala	Thr	Phe	Ala	Phe
65					70					75					80
Phe	Thr	Gly	Phe	Ser	Val	Thr	Tyr	Leu	Leu	Met	Asp	Asn	Gln	Gly	Leu
				85					90					95	
Asn	Phe	Phe	Leu	Val	Leu	Ala	Gly	Val	Leu	Gly	Met	Asn	Thr	Leu	Met
			100					105						110	
Leu	Ala	Val	Trp	Leu	Ala	Met	Leu	Phe	Leu	Arg	Val	Lys	Val	Gly	Arg
		115				120							125		
Phe	Phe	Ser	Ser	Pro	Ala	Thr	Trp	Phe	Arg	Gly	Lys	Asp	Pro	Val	Asn
		130				135					140				
Gln	Ala	Val	Leu	Arg	Leu	Tyr	Ala	Asp	Glu	Trp	Arg	Gln	Pro	Ser	Val
145					150					155					160
Arg	Trp	Lys	Ile	Gly	Ala	Thr	Ser	His	Ser	Leu	Trp	Leu	Cys	Thr	Leu
				165					170					175	
Leu	Gly	Met	Leu	Val	Ser	Val	Leu	Leu	Leu	Leu	Val	Arg	Gln	Tyr	
			180					185					190		
Thr	Phe	Asn	Trp	Glu	Ser	Thr	Leu	Leu	Ser	Asn	Ala	Ala	Ser	Val	Arg
		195					200					205			



Ala Val Glu Met Leu Ala Trp Leu Pro Ser Lys Leu Gly Phe Pro Val  
 210 215 220  
 Pro Asp Ala Arg Ala Val Ile Glu Gly Arg Leu Asn Gly Asn Ile Ala  
 225 230 235 240  
 Asp Ala Arg Ala Trp Ser Gly Leu Leu Val Gly Ser Ile Ala Cys Tyr  
 245 250 255  
 Gly Ile Leu Pro Arg Leu Leu Ala Trp Val Val Cys Lys Ile Leu Leu  
 260 265 270  
 Lys Thr Ser Glu Asn Gly Leu Asp Leu Glu Lys Pro Tyr Tyr Gln Ala  
 275 280 285  
 Val Ile Arg Arg Trp Gln Asn Lys Ile Thr Asp Ala Asp Thr Arg Arg  
 290 295 300  
 Glu Thr Val Ser Ala Val Ser Pro Lys Ile Ile Leu Asn Asp Ala Pro  
 305 310 315 320  
 Lys Trp Ala Val Met Leu Glu Thr Glu Trp Gln Asp Gly Glu Trp Phe  
 325 330 335  
 Glu Gly Arg Leu Ala Gln Glu Trp Leu Asp Lys Gly Val Ala Thr Asn  
 340 345 350  
 Arg Glu Gln Val Ala Ala Leu Glu Thr Glu Leu Lys Gln Lys Pro Ala  
 355 360 365  
 Gln Leu Leu Ile Gly Val Arg Ala Gln Thr Val Pro Asp Arg Gly Val  
 370 375 380  
 Leu Arg Gln Ile Val Arg Leu Ser Glu Ala Ala Gln Gly Gly Ala Val  
 385 390 395 400  
 Val Gln Leu Leu Ala Glu Gln Gly Leu Ser Asp Asp Leu Ser Glu Lys  
 405 410 415  
 Leu Glu His Trp Arg Asn Ala Leu Ala Glu Cys Gly Ala Ala Trp Leu  
 420 425 430  
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 <213> *Neisseria meningitidis*

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 <223> N= Unknown

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 <223> N= Unknown

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 gaggaaaaaa tcatccgtcg ggcgaagatg atcgacagga accgtatgct gcgggagacg 180  
 ttggaacgtg tgcgtgcggg gtcgttctgg ttgtgggtgg cggcggcgac gtttgcgttt 240  
 nttaccgntt ttccagttac ttatcttcta atggacaatc agggctctgaa tttctttttg 300  
 gttttggcgg gcgtgntggg catgaatacg ctgatgctgg cagtatggtt ggcaatgttg 360

ttcctgcgcg	tgaaagtggg	gcgttttttc	agcagtcg	cgacgtggtt	tcggggcaaa	420
gacctgtca	atcaggcggt	gttgcggctg	tatgcggacg	agtggcggn	accttcggt	480
cgttggaaaa	taggcgcaac	gtcgcacagc	ctgtggdct	gcacgctgct	cggaatgctg	540
gtgtcggat	tgttgctgct	tttggcgcg	caatatacgt	tcaactggga	aagcacgctg	600
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ggttttccc	tgcctgatgc	gcggcggtc	atcgaaggtc	gtctgaacgg	caatattgcc	720
gatgcgcggg	cttggtcggg	gctgctggtc	ggcagtatcg	cctgctacgg	catcctgccg	780
cgctcttgg	cttggg	atgcaaaatc	cttntgnaaa	caagcgaaaa	cggcttggat	840
ttggaaaagc	ncnnnnntcn	nncgntcatc	cgccgctggc	agaacaaaat	caccgatg	900
gatacgctc	gggaaaccgt	gtccg	tcgccgaaaa	tcgtcttgaa	cgatgcgcg	960
aaatggcg	tcattgctgga	gaccgaatgg	caggacggcg	aatgggtcga	gggcaggctg	1020
gcgcaggaat	ggctggataa	gggcgttgcc	gccaatcggg	aacagggtgc	cgcgctggag	1080
acagagctga	agcagaaacc	ggcgcaactg	cttatcggcg	tgcgcgccca	aactgtgccc	1140
gaccgcggcg	tgttgcgga	gatcgctcga	ctttcggaag	cggcgagg	cggcgcggtg	1200
gtgcanttt	tggcggaaca	ggggctttca	gacgacctt	cggaaaagct	ggaacattgg	1260
cgtaacgcgc	tgaccgaatg	cggcgcg	tggctggaac	ccgacagagc	ggcgaggaa	1320
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 <213> *Neisseria meningitidis*

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<220>  
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<220>  
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<223> Xaa= any amino acid

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			20					25					30			
Leu	Arg	Arg	Val	Asp	Gly	Ser	Thr	Glu	Glu	Lys	Ile	Ile	Arg	Arg	Ala	
			35				40					45				
Lys	Met	Ile	Asp	Arg	Asn	Arg	Met	Leu	Arg	Glu	Thr	Leu	Glu	Arg	Val	
	50					55					60					
Arg	Ala	Gly	Ser	Phe	Trp	Leu	Trp	Val	Ala	Ala	Ala	Thr	Phe	Ala	Phe	
65					70					75					80	
Xaa	Thr	Xaa	Phe	Ser	Val	Thr	Tyr	Leu	Leu	Met	Asp	Asn	Gln	Gly	Leu	
				85					90					95		
Asn	Phe	Phe	Leu	Val	Leu	Ala	Gly	Val	Xaa	Gly	Met	Asn	Thr	Leu	Met	
			100					105					110			
Leu	Ala	Val	Trp	Leu	Ala	Met	Leu	Phe	Leu	Arg	Val	Lys	Val	Gly	Arg	
			115				120					125				
Phe	Phe	Ser	Ser	Pro	Ala	Thr	Trp	Phe	Arg	Gly	Lys	Asp	Pro	Val	Asn	
	130					135					140					
Gln	Ala	Val	Leu	Arg	Leu	Tyr	Ala	Asp	Glu	Trp	Arg	Xaa	Pro	Ser	Val	
145					150					155					160	
Arg	Trp	Lys	Ile	Gly	Ala	Thr	Ser	His	Ser	Leu	Trp	Leu	Cys	Thr	Leu	
				165					170					175		
Leu	Gly	Met	Leu	Val	Ser	Val	Leu	Leu	Leu	Leu	Val	Arg	Gln	Tyr		
			180					185					190			
Thr	Phe	Asn	Trp	Glu	Ser	Thr	Leu	Leu	Gly	Asp	Ser	Ser	Ser	Val	Arg	
		195					200					205				
Leu	Val	Glu	Met	Leu	Ala	Trp	Leu	Pro	Ala	Lys	Leu	Gly	Phe	Pro	Val	
	210					215					220					
Pro	Asp	Ala	Arg	Ala	Val	Ile	Glu	Gly	Arg	Leu	Asn	Gly	Asn	Ile	Ala	
225					230					235					240	
Asp	Ala	Arg	Ala	Trp	Ser	Gly	Leu	Leu	Val	Gly	Ser	Ile	Ala	Cys	Tyr	
				245					250					255		
Gly	Ile	Leu	Pro	Arg	Leu	Leu	Ala	Trp	Ala	Val	Cys	Lys	Ile	Leu	Xaa	
			260					265					270			
Xaa	Thr	Ser	Glu	Asn	Gly	Leu	Asp	Leu	Glu	Lys	Xaa	Xaa	Xaa	Xaa	Xaa	
		275					280					285				

Xaa Ile Arg Arg Trp Gln Asn Lys Ile Thr Asp Ala Asp Thr Arg Arg  
 290 295 300  
 Glu Thr Val Ser Ala Val Ser Pro Lys Ile Val Leu Asn Asp Ala Pro  
 305 310 315 320  
 Lys Trp Ala Val Met Leu Glu Thr Glu Trp Gln Asp Gly Glu Trp Phe  
 325 330 335  
 Glu Gly Arg Leu Ala Gln Glu Trp Leu Asp Lys Gly Val Ala Ala Asn  
 340 345 350  
 Arg Glu Gln Val Ala Ala Leu Glu Thr Glu Leu Lys Gln Lys Pro Ala  
 355 360 365  
 Gln Leu Leu Ile Gly Val Arg Ala Gln Thr Val Pro Asp Arg Gly Val  
 370 375 380  
 Leu Arg Gln Ile Val Arg Leu Ser Glu Ala Ala Gln Gly Gly Ala Val  
 385 390 395 400  
 Val Xaa Leu Leu Ala Glu Gln Gly Leu Ser Asp Asp Leu Ser Glu Lys  
 405 410 415  
 Leu Glu His Trp Arg Asn Ala Leu Thr Glu Cys Gly Ala Ala Trp Leu  
 420 425 430  
 Glu Pro Asp Arg Ala Ala Gln Glu Gly Arg Leu Lys Thr Asn Asp Arg  
 435 440 445

Thr

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 <212> DNA  
 <213> Neisseria gonorrhoeae

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 <212> PRT  
 <213> Neisseria gonorrhoeae

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Ala	Gly	Phe	Ser	Gly	Thr	Tyr	Leu	Leu	Met	Asp	Asn	Gln	Gly	Leu	Asn	
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Trp	Lys	Ile	Gly	Ala	Thr	Ala	His	Ser	Leu	Trp	Leu	Cys	Thr	Leu	Leu	
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Gly	Met	Leu	Val	Ser	Val	Leu	Leu	Leu	Leu	Val	Arg	Gln	Tyr	Thr		
130					135					140						
Phe	Asn	Trp	Glu	Ser	Thr	Leu	Leu	Ser	Asn	Ala	Ala	Ser	Val	Arg	Ala	
145					150					155					160	
Val	Glu	Met	Leu	Ala	Trp	Leu	Pro	Ser	Lys	Leu	Gly	Phe	Pro	Val	Pro	
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Asp	Ala	Arg	Ala	Val	Ile	Glu	Gly	Arg	Leu	Asn	Gly	Asn	Ile	Ala	Asp	
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Ala	Arg	Ala	Trp	Ser	Gly	Leu	Leu	Val	Gly	Ser	Ile	Val	Cys	Tyr	Gly	
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Ile	Leu	Pro	Arg	Leu	Leu	Ala	Trp	Val	Val	Cys	Lys	Ile	Leu	Leu	Lys	
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Thr	Ser	Glu	Asn	Gly	Leu	Asp	Leu	Glu	Lys	Thr	Tyr	Tyr	Gln	Ala	Val	
225					230					235					240	
Ile	Arg	Arg	Trp	Gln	Asn	Lys	Ile	Thr	Asp	Ala	Asp	Thr	Arg	Arg	Glu	
245					250					255						
Thr	Val	Ser	Ala	Val	Ser	Pro	Lys	Ile	Val	Leu	Asn	Asp	Ala	Pro	Lys	
260					265					270						
Trp	Ala	Leu	Met	Leu	Glu	Thr	Glu	Trp	Gln	Asp	Gly	Gln	Trp	Phe	Glu	
275					280					285						
Gly	Arg	Leu	Ala	Gln	Glu	Trp	Leu	Asp	Lys	Gly	Val	Ala	Ala	Asn	Arg	
290					295					300						
Glu	Gln	Val	Ala	Ala	Leu	Glu	Thr	Glu	Leu	Lys	Gln	Lys	Pro	Ala	Gln	
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Leu Leu Ile Gly Val Arg Ala Gln Thr Val Pro Asp Arg Gly Val Leu  
325 330 335

Arg Gln Ile Val Arg Leu Ser Glu Ala Ala Gln Gly Gly Ala Val Val  
340 345 350

Gln Leu Leu Ala Glu Gln Gly Leu Ser Asp Asp Leu Ser Glu Lys Leu  
355 360 365

Glu His Trp Arg Asn Ala Leu Thr Glu Cys Gly Ala Ala Trp Leu Glu  
370 375 380

Pro Asp Arg Val Ala Gln Glu Gly Arg Leu Lys Asp Gln  
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<211> 1341

<212> DNA

<213> Neisseria gonorrhoeae

<400> 205

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<213> Neisseria gonorrhoeae

<400> 206

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 Glu Met Ile Asp Arg Asp Arg Met Leu Arg Asp Thr Leu Glu Arg Val  
 50 55 60  
 Arg Ala Gly Ser Phe Trp Leu Trp Val Val Val Ala Ser Met Met Phe  
 65 70 75 80  
 Thr Ala Gly Phe Ser Gly Thr Tyr Leu Leu Met Asp Asn Gln Gly Leu  
 85 90 95  
 Asn Phe Phe Leu Val Leu Ala Gly Val Leu Gly Met Asn Thr Leu Met  
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 115 120 125  
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 130 135 140  
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 145 150 155 160  
 Arg Trp Lys Ile Gly Ala Thr Ala His Ser Leu Trp Leu Cys Thr Leu  
 165 170 175  
 Leu Gly Met Leu Val Ser Val Leu Leu Leu Leu Val Arg Gln Tyr  
 180 185 190  
 Thr Phe Asn Trp Glu Ser Thr Leu Leu Ser Asn Ala Ala Ser Val Arg  
 195 200 205  
 Ala Val Glu Met Leu Ala Trp Leu Pro Ser Lys Leu Gly Phe Pro Val  
 210 215 220  
 Pro Asp Ala Arg Ala Val Ile Glu Gly Arg Leu Asn Gly Asn Ile Ala  
 225 230 235 240  
 Asp Ala Arg Ala Trp Ser Gly Leu Leu Val Gly Ser Ile Val Cys Tyr  
 245 250 255  
 Gly Ile Leu Pro Arg Leu Leu Ala Trp Val Val Cys Lys Ile Leu Leu  
 260 265 270  
 Lys Thr Ser Glu Asn Gly Leu Asp Leu Glu Lys Thr Tyr Tyr Gln Ala  
 275 280 285  
 Val Ile Arg Arg Trp Gln Asn Lys Ile Thr Asp Ala Asp Thr Arg Arg  
 290 295 300  
 Glu Thr Val Ser Ala Val Ser Pro Lys Ile Val Leu Asn Asp Ala Pro  
 305 310 315 320  
 Lys Trp Ala Leu Met Leu Glu Thr Glu Trp Gln Asp Gly Gln Trp Phe  
 325 330 335



Glu Gly Arg Leu Ala Gln Glu Trp Leu Asp Lys Gly Val Ala Ala Asn  
340 345 350

Arg Glu Gln Val Ala Ala Leu Glu Thr Glu Leu Lys Gln Lys Pro Ala  
355 360 365

Gln Leu Leu Ile Gly Val Arg Ala Gln Thr Val Pro Asp Arg Gly Val  
370 375 380

Leu Arg Gln Ile Val Arg Leu Ser Glu Ala Ala Gln Gly Gly Ala Val  
385 390 395 400

Val Gln Leu Leu Ala Glu Gln Gly Leu Ser Asp Asp Leu Ser Glu Lys  
405 410 415

Leu Glu His Trp Arg Asn Ala Leu Thr Glu Cys Gly Ala Ala Trp Leu  
420 425 430

Glu Pro Asp Arg Val Ala Gln Glu Gly Arg Leu Lys Asp Gln  
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cagcttgtgt tccggcgctc tccggctgcc tgtcggtttg agctgtgtcg gcaggttgcg 240  
gtttgaccg gtttttcttg ggtgcggcag gggacgtcat tctcctgccg ctttcgtctg 300  
tgccgtccgg ctgtgcgggt tcggatgagg cggcgtgggt gtgttcgggt tgggcggcat 360  
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Cys Ala Cys Phe Ser Gly Val Ser Phe Arg Gly Ser Gly Arg Gly Thr  
35 40 45

Phe Val Gly Ser Thr Gly Val Ser Leu Ser Val Phe Ser Ala Cys Val  
50 55 60

Xaa Gly Val Val Arg Leu Pro Val Gly Leu Ser Cys Val Gly Arg Leu  
65 70 75 80

Xaa Xaa Leu Thr Arg Phe Phe Leu Gly Ala Ala Gly Asp Val Ile Leu  
85 90 95

Leu Pro Leu Ser Ser Val Pro Ser Gly Cys Ala Gly Ser Asp Glu Ala  
100 105 110

Ala Trp Trp Cys Ser Gly Trp Ala Ala Ser Cys Pro Thr Thr Pro Phe  
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Ala Arg Val Leu Ser Ser  
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<213> Neisseria meningitidis

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cgggggttcgg	gacggggggac	gtttgtgggc	agtacggggg	tttctttgag	tgtgttttca	240
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aatggcggca	atcagggtgc	ggacggtgtg	cggtttgggt	ttcatcgggt	gcttcctttc	1320
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Ser	Leu	Gly	Cys	Ala	Cys	Phe	Ser	Gly	Val	Ser	Phe	Arg	Gly	Ser	Gly
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Arg	Gly	Thr	Phe	Val	Gly	Ser	Thr	Gly	Val	Ser	Leu	Ser	Val	Phe	Ser
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Ala	Cys	Val	Pro	Ala	Ser	Ser	Gly	Cys	Leu	Ser	Val	Ala	Val	Ser	Ala
				85					90					95	
Gly	Cys	Gly	Leu	Thr	Arg	Phe	Phe	Leu	Gly	Ala	Ala	Gly	Asp	Gly	Ser
			100					105					110		
Pro	Leu	Pro	Leu	Ser	Ser	Val	Pro	Ser	Gly	Cys	Ala	Gly	Ser	Asp	Glu
		115					120					125			
Ala	Ala	Trp	Trp	Cys	Ser	Gly	Trp	Ala	Ala	Ser	Cys	Pro	Thr	Thr	Pro
	130					135					140				
Phe	Gly	Ser	Gln	Asn	Ser	Val	Ser	Arg	Gly	Leu	Ser	Val	Cys	Cys	Gly
145				150						155				160	
Ser	Ala	Arg	Val	Leu	Ser	Pro	Phe	Gly	Leu	Asn	Val	Leu	Thr	Met	Pro
			165						170					175	
Ile	Ala	Asn	Ala	Pro	Met	Ala	Ala	Ile	Gln	Met	Ser	Asn	Thr	Ala	Arg
		180						185					190		
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		195					200					205			
Ile	Leu	Ile	Val	Leu	Leu	Gly	Cys	Arg	Ala	Met	Pro	Ser	Glu	Gly	Gly
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225				230						235				240	

Asp Asp Phe Leu Tyr Ala Asp Gly Gly Ala Asp Phe Leu Gly Asn Leu  
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 Arg Leu Phe Phe Gly Gly Glu Asp Ala His Asn Val Gly Tyr Val Ala  
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 Val Gly Asn Asp Phe Asp Ala Arg Leu Cys Gly Gly Ala Asp Ala Gln  
                   275                                  280                                  285  
 Gln Arg Gly Ala Asp Phe Gly Cys Val Pro Ser Val Ala Gly Asp Val  
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 Ala Gly Ser Ala Arg Gln Gly Gly Asp Gly Asn Ile Val Val His Ala  
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 Phe Gly Gly Leu Phe Gly Thr Cys Asn Leu Thr Asp Glu Leu Phe Phe  
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 Ala Phe Gly Gly Asp Leu Ser Glu Gln Gln Gln Val Ala Val Val Ala  
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                   355                                  360                                  365  
 Gln Ile Gly Thr Gly Gly Gly Phe Asp Thr Gln Arg His Asn Val Val  
                   370                                  375                                  380  
 Val Gly Leu Arg Ala Gly Gly Ser Ala Val Asp Gly Gly Phe Arg Ala  
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 Asp Gly Gly Ala Ser Asp Tyr Cys Ala Asp Ala Ala Ala Lys Gly Lys  
                   405                                  410                                  415  
 Ala Glu Asn Gly Gly Asn Gln Gly Ala Asp Gly Val Arg Phe Gly Phe  
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gccgagggca aggctgagga cggcggcagt caggggtgcgg acggtgtgcg gtttgggttt 1320  
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<223> Xaa= any amino acid

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35 40 45

Ser Xaa Ser Leu Gly Val Ser Xaa Gly Cys Ala Cys Phe Ser Gly Val  
50 55 60

Ser Phe Arg Gly Ser Gly Arg Gly Thr Phe Val Gly Ser Thr Gly Val  
65 70 75 80

Ser Leu Ser Val Phe Ser Ala Cys Ala Pro Ala Ser Ser Gly Cys Leu  
85 90 95

Ser Val Xaa Ala Val Ser Ala Gly Cys Gly Leu Thr Arg Xaa Phe Xaa  
100 105 110

Gly Ala Ala Gly Asp Gly Ser Pro Leu Pro Leu Ser Ser Val Pro Ser  
115 120 125



Gly Cys Ala Gly Ala Asp Glu Glu Ala Xaa Xaa Cys Ser Gly Trp Ala  
 130 135 140  
 Ala Ser Cys Pro Thr Thr Pro Phe Gly Ser Gln Asn Ser Val Ser Arg  
 145 150 155 160  
 Gly Leu Ser Val Cys Cys Gly Ser Val Trp Arg Val Leu Ser Pro Phe  
 165 170 175  
 Gly Xaa Asn Val Leu Thr Met Pro Ile Ala Asn Ala Pro Met Ala Val  
 180 185 190  
 Ile Gln Met Ser Asn Thr Ala Arg Ile Arg Ser Leu Gly Val Ser Leu  
 195 200 205  
 Lys Gly Leu Phe Xaa Phe Phe Ala Ile Leu Ile Val Leu Leu Gly Cys  
 210 215 220  
 Arg Ala Met Pro Ser Glu Gly Gly Ser Asp Gly Ile Ala Glu Ser Ala  
 225 230 235 240  
 Leu Asp Val Val Xaa Val Glu Gly Asp Asp Phe Leu Tyr Ala Asp Gly  
 245 250 255  
 Gly Ala Asp Phe Leu Gly Asn Leu Arg Leu Phe Phe Gly Gly Glu Asp  
 260 265 270  
 Ala His Asn Val Gly Tyr Val Ala Val Gly Asn Asp Phe Asp Ala Arg  
 275 280 285  
 Leu Cys Gly Gly Ala Asp Ala Gln Gln Arg Gly Ala Asp Phe Gly Cys  
 290 295 300  
 Val Pro Ser Val Ala Gly Asp Val Ala Gly Ser Ala Arg Gln Gly Gly  
 305 310 315 320  
 Asp Gly Asn Val Xaa Val His Ala Phe Gly Gly Leu Phe Gly Thr Cys  
 325 330 335  
 Asn Leu Thr Asp Glu Leu Phe Leu Ala Phe Gly Gly Asp Leu Ser Glu  
 340 345 350  
 Gln Gln Gln Val Ala Val Val Ala Asp Asn Gly Asp Leu Gly Arg Val  
 355 360 365  
 Xaa Phe Gly Leu Val Val Leu Ala Gln Ile Gly Ala Gly Gly Gly Phe  
 370 375 380  
 Asp Thr Gln Arg His Tyr Val Val Val Gly Xaa Arg Ala Gly Gly Ser  
 385 390 395 400  
 Ala Val Asp Gly Gly Phe Arg Ala Asp Arg Arg Ala Ala Asp Asp Cys  
 405 410 415  
 Ala Asp Ala Ala Ala Glu Gly Lys Ala Glu Asp Gly Gly Ser Gln Gly  
 420 425 430

Ala Asp Gly Val Arg Phe Gly Phe His Arg Val Leu Pro Phe Leu Gly  
 435 440 445

Val Ser Asp Gly Ile Ala Leu Arg His Ala Val  
 450 455

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 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 213  
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 ttggtatggt tttctttggg cgtttctttt tctttgggtg tttctttggg ctgcgcctgt 180  
 ttttcgggtg tttcttttcg ggggttcggga tggggggcgt ttgtgggcag tacgggggtt 240  
 tctttgagtg tgttttcagc ttgtgttccg gtgccgggta acgaatcggc tgcccggggc 300  
 gcattccgaag ggcgcgggtt gaccgggtt ttcttgggtg cggcagggga cggcagtcgg 360  
 ctgccgcttt cttctgtgcc gtccggctgt gcgggttcgg atgaggcggc gtggtggtgt 420  
 tcgggttggg cggcatcttg tccgacggcg ccgtttggca gccagaattc ggtttcgcgg 480  
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 gtaggtaatg attttgacgc gcgcctgtgt agcggggctg atgcccagca gcgtggcgcg 900  
 gactttggac gtgttccaag tgtcgccggc gatgtcgccc gcagtgcgcg gcagggaggg 960  
 gacggtaatg tagttgtata cgccttcggc ggcctgttcg gaacgtgcaa tctgaccgac 1020  
 gaactgtttt tcgccttcgg tggcgacttg tccgagcagc agcagggtggc ggttgtagcc 1080  
 gacgacggag atttggggcg tgtagccttt ggtttggttg ttttggcgca ggtaggaacg 1140  
 ggcggtgggt tcgatacgca acgccataac gttgtcatcg gtttgcgcgc cgggtggttcg 1200  
 gcggtcgatg acggattttg cgcgcagggc ggcgccgcgc acgactgcgc tgaagcagcc 1260  
 gccgagggca aggctgagga cggcggcaat cagggtgctg acggtgtgtg gtttgggttt 1320  
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 <213> Neisseria gonorrhoeae

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 Gly Val Phe Phe Gly Val Ser Gly Leu Val Trp Phe Ser Leu Gly Val  
 35 40 45  
 Ser Phe Ser Leu Gly Val Ser Leu Gly Cys Ala Cys Phe Ser Gly Val  
 50 55 60  
 Ser Phe Arg Gly Ser Gly Trp Gly Ala Phe Val Gly Ser Thr Gly Val  
 65 70 75 80

Ser	Leu	Ser	Val	Phe	Ser	Ala	Cys	Val	Pro	Val	Pro	Val	Asn	Glu	Ser	85	90	95
Ala	Ala	Arg	Ala	Ala	Ser	Glu	Gly	Arg	Gly	Leu	Thr	Arg	Phe	Phe	Leu	100	105	110
Gly	Ala	Ala	Gly	Asp	Gly	Ser	Pro	Leu	Pro	Leu	Ser	Ser	Val	Pro	Ser	115	120	125
Gly	Cys	Ala	Gly	Ser	Asp	Glu	Ala	Ala	Trp	Trp	Cys	Ser	Gly	Trp	Ala	130	135	140
Ala	Ser	Cys	Pro	Thr	Ala	Pro	Phe	Gly	Ser	Gln	Asn	Ser	Val	Ser	Arg	145	150	155
Gly	Leu	Ser	Val	Cys	Cys	Gly	Ser	Val	Trp	Arg	Val	Leu	Ser	Pro	Phe	165	170	175
Gly	Leu	Asn	Val	Leu	Thr	Met	Pro	Thr	Ala	Asn	Ala	Pro	Met	Ala	Val	180	185	190
Ile	Gln	Met	Ser	Asn	Thr	Ala	Arg	Ile	Arg	Ser	Leu	Gly	Val	Ser	Leu	195	200	205
Lys	Gly	Leu	Phe	Gly	Phe	Phe	Ala	Ile	Leu	Ile	Val	Leu	Leu	Gly	Cys	210	215	220
Arg	Ala	Met	Pro	Ser	Glu	Gly	Gly	Ser	Asp	Gly	Ile	Ala	Glu	Ser	Ala	225	230	235
Leu	Asp	Val	Val	Leu	Val	Glu	Gly	Asn	Asp	Phe	Leu	Tyr	Ala	Asp	Gly	245	250	255
Gly	Ala	Asp	Phe	Leu	Gly	Asn	Leu	Arg	Leu	Phe	Phe	Gly	Gly	Glu	Asp	260	265	270
Ala	His	Asn	Val	Gly	Tyr	Ile	Ala	Val	Gly	Asn	Asp	Phe	Asp	Ala	Arg	275	280	285
Leu	Cys	Ser	Gly	Ala	Asp	Ala	Gln	Gln	Arg	Gly	Ala	Asp	Phe	Gly	Arg	290	295	300
Val	Pro	Ser	Val	Ala	Gly	Asp	Val	Ala	Arg	Ser	Ala	Arg	Gln	Gly	Gly	305	310	315
Asp	Gly	Asn	Val	Val	Val	Tyr	Ala	Phe	Gly	Gly	Leu	Phe	Gly	Thr	Cys	325	330	335
Asn	Leu	Thr	Asp	Glu	Leu	Phe	Phe	Ala	Phe	Gly	Gly	Asp	Leu	Ser	Glu	340	345	350
Gln	Gln	Gln	Val	Ala	Val	Val	Ala	Asp	Asp	Gly	Asp	Leu	Gly	Arg	Val	355	360	365
Ala	Phe	Gly	Leu	Val	Val	Leu	Ala	Gln	Val	Gly	Thr	Gly	Gly	Gly	Phe	370	375	380

Asp Thr Gln Arg His Asn Val Val Ile Gly Leu Arg Ala Gly Gly Ser  
385 390 395 400

Ala Val Asp Asp Gly Phe Cys Ala Asp Gly Gly Pro Ala Asp Asp Cys  
405 410 415

Ala Glu Ala Ala Ala Glu Gly Lys Ala Glu Asp Gly Gly Asn Gln Gly  
420 425 430

Ala Asp Gly Val Trp Phe Gly Phe His Arg Gly Leu Pro Phe Leu Gly  
435 440 445

Val Ser Asp Gly Ile Ala Leu Arg His Ala Val  
450 455

<210> 215  
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cgtaaaaaag aaatcgtctt cggcacgacc gtcggcgact tcggcgatat ggtcaaagaa 180  
caaatccaag ccgagctgga gaaaaaaggc tacaccgtca aactggtcga gtttaccgac 240  
tatgtacgcc cgaatctggc attggctgag ggcgagttg 279

<210> 216  
<211> 92  
<212> PRT  
<213> Neisseria meningitidis

<400> 216  
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20 25 30  
Ala Ala Ala Asp Asn Gly Ala Ala Lys Lys Glu Ile Val Phe Gly Thr  
35 40 45  
Thr Val Gly Asp Phe Gly Asp Met Val Lys Glu Gln Ile Gln Ala Glu  
50 55 60  
Leu Glu Lys Lys Gly Tyr Thr Val Lys Leu Val Glu Phe Thr Asp Tyr  
65 70 75 80  
Val Arg Pro Asn Leu Ala Leu Ala Glu Gly Glu Leu  
85 90

<210> 217  
<211> 864  
<212> DNA  
<213> Neisseria meningitidis

<400> 217

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gcgaaaaaag	aaatcgtctt	cggcacgacc	gtcggcgact	tcggcgatat	ggtcaaagaa	180
caaatccaag	cggagctgga	gaaaaaaggc	tacaccgtca	aactggtcga	gtttaccgac	240
tatgtacgcc	cgaatctggc	attggctgag	ggcgagttgg	acatcaacgt	cttccaacac	300
aaaccctatc	ttgacgactt	caaaaaagaa	cacaatctgg	acatcaccga	agtcttccaa	360
gtgccgaccg	cgcctttggg	actgtaccgc	ggcaagctga	aatcgctgga	agaagtcaaa	420
gacggcagca	ccgtatccgc	gcccacgcac	ccgtccaact	tcgccgcgt	cttggtgatg	480
ctcgacgaac	tgggttgat	caaactcaaa	gacggcatca	atccgttgac	cgcatacaaa	540
gcggacatcg	ccgagaacct	gaaaaacatc	aaaatcgtcg	agcttgaagc	cgcgcaactg	600
ccgcgtagcc	gcgccgacgt	ggattttgcc	gtcgtcaacg	gcaactacgc	cataagcagc	660
ggcatgaagc	tgaccgaagc	cctgttccaa	gaaccgagct	ttgcctatgt	caactggtct	720
gccgtcaaaa	ccgccgacaa	agacagccaa	tggtttaaag	acgtaaccga	ggcctataac	780
tccgacgcgt	tcaaagccta	cgcgcacaaa	cgcttcgagg	gctacaaatc	ccctgccgca	840
tggaatgaag	ggcagccaa	ataa				864

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<211> 287

<212> PRT

<213> Neisseria meningitidis

<400> 218

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			20					25					30		
Ser	Ala	Ala	Ala	Asp	Asn	Gly	Ala	Ala	Lys	Lys	Glu	Ile	Val	Phe	Gly
			35				40					45			
Thr	Thr	Val	Gly	Asp	Phe	Gly	Asp	Met	Val	Lys	Glu	Gln	Ile	Gln	Ala
		50				55					60				
Glu	Leu	Glu	Lys	Lys	Gly	Tyr	Thr	Val	Lys	Leu	Val	Glu	Phe	Thr	Asp
65					70					75				80	
Tyr	Val	Arg	Pro	Asn	Leu	Ala	Leu	Ala	Glu	Gly	Glu	Leu	Asp	Ile	Asn
				85					90					95	
Val	Phe	Gln	His	Lys	Pro	Tyr	Leu	Asp	Asp	Phe	Lys	Lys	Glu	His	Asn
		100						105					110		
Leu	Asp	Ile	Thr	Glu	Val	Phe	Gln	Val	Pro	Thr	Ala	Pro	Leu	Gly	Leu
		115					120					125			
Tyr	Pro	Gly	Lys	Leu	Lys	Ser	Leu	Glu	Glu	Val	Lys	Asp	Gly	Ser	Thr
	130					135						140			
Val	Ser	Ala	Pro	Asn	Asp	Pro	Ser	Asn	Phe	Ala	Arg	Val	Leu	Val	Met
145				150						155					160
Leu	Asp	Glu	Leu	Gly	Trp	Ile	Lys	Leu	Lys	Asp	Gly	Ile	Asn	Pro	Leu
			165						170					175	

Thr Ala Ser Lys Ala Asp Ile Ala Glu Asn Leu Lys Asn Ile Lys Ile  
180 185 190

Val Glu Leu Glu Ala Ala Gln Leu Pro Arg Ser Arg Ala Asp Val Asp  
195 200 205

Phe Ala Val Val Asn Gly Asn Tyr Ala Ile Ser Ser Gly Met Lys Leu  
210 215 220

Thr Glu Ala Leu Phe Gln Glu Pro Ser Phe Ala Tyr Val Asn Trp Ser  
225 230 235 240

Ala Val Lys Thr Ala Asp Lys Asp Ser Gln Trp Leu Lys Asp Val Thr  
245 250 255

Glu Ala Tyr Asn Ser Asp Ala Phe Lys Ala Tyr Ala His Lys Arg Phe  
260 265 270

Glu Gly Tyr Lys Ser Pro Ala Ala Trp Asn Glu Gly Ala Ala Lys  
275 280 285

<210> 219  
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gcgaanaaag	aaatcgtctt	cggcacgacc	gtcggcgact	tcggcgatat	ggtcaaagaa	180
canatccaac	ccgagctgga	gaaaaaaggc	tacaccgtca	aactggtcga	gtntaccgac	240
tatgtgcgcn	cgaatctggc	attggctgag	ggcgagttgg	acatcaacgt	cttncaacac	300
anacnctatc	ttgacgactn	caaaaaanaa	cacaatctgg	acatcaccnn	agtcttncaa	360
gtgccgaccg	cgccctttggg	actgtaccgg	ggcaagctga	aatcgctgga	nnaagtcaaa	420
ganggcagca	ccgtatccgc	gcccacgcac	ccgtnnnact	tcgnccgcgt	cttggtgatg	480
ctcgacgaac	tgggttngat	caaactcaaa	gacngcatca	nnnnngnnngnn	nnnancnana	540
nnnganannn	nnnnannnnnt	nnnnnnnnnn	nnnnncnncg	nnnnnnnnann	nnnnnnnnnn	600
ncgnntnnnn	nngcnnnnnt	nnannntnnn	nnnnnnnnnn	nnnnnnnnnn	nannannagc	660
ggcatgaagc	tgaccgaagc	cctgttccaa	gaaccgagct	ttgcctatgt	caactggtct	720
gccgtcaaaa	ccgccgacaa	agacagccaa	tggcttaaag	acgtaaccga	ggcctataac	780
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<212> PRT

<213> Neisseria meningitidis

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Leu	Ala	Ala	Cys	Gly	Gly	Gln	Lys	Asp	Ser	Ala	Pro	Ala	Ala	Ser	Ala
			20					25						30	
Ser	Ala	Ala	Ala	Asp	Asn	Gly	Ala	Ala	Xaa	Lys	Glu	Ile	Val	Phe	Gly
			35				40					45			
Thr	Thr	Val	Gly	Asp	Phe	Gly	Asp	Met	Val	Lys	Glu	Xaa	Ile	Gln	Pro
	50					55					60				
Glu	Leu	Glu	Lys	Lys	Gly	Tyr	Thr	Val	Lys	Leu	Val	Glu	Xaa	Thr	Asp
65					70					75				80	
Tyr	Val	Arg	Xaa	Asn	Leu	Ala	Leu	Ala	Glu	Gly	Glu	Leu	Asp	Ile	Asn
				85					90					95	
Val	Xaa	Gln	His	Xaa	Xaa	Tyr	Leu	Asp	Asp	Xaa	Lys	Lys	Xaa	His	Asn
			100					105						110	
Leu	Asp	Ile	Thr	Xaa	Val	Xaa	Gln	Val	Pro	Thr	Ala	Pro	Leu	Gly	Leu
	115						120					125			
Tyr	Pro	Gly	Lys	Leu	Lys	Ser	Leu	Xaa	Xaa	Val	Lys	Xaa	Gly	Ser	Thr
	130					135					140				
Val	Ser	Ala	Pro	Asn	Asp	Pro	Xaa	Xaa	Phe	Xaa	Arg	Val	Leu	Val	Met
145					150					155					160
Leu	Asp	Glu	Leu	Gly	Xaa	Ile	Lys	Leu	Lys	Asp	Xaa	Ile	Xaa	Xaa	Xaa
				165					170					175	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			180					185						190	
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ala	Xaa	Xaa	Xaa
			195				200					205			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ser	Gly	Met	Lys	Leu
	210						215				220				
Thr	Glu	Ala	Leu	Phe	Gln	Glu	Pro	Ser	Phe	Ala	Tyr	Val	Asn	Trp	Ser
225					230					235					240
Ala	Val	Lys	Thr	Ala	Asp	Lys	Asp	Ser	Gln	Trp	Leu	Lys	Asp	Val	Thr
				245					250					255	
Glu	Ala	Tyr	Asn	Ser	Asp	Ala	Phe	Lys	Ala	Tyr	Ala	His	Lys	Arg	Phe
			260					265					270		
Glu	Gly	Tyr	Lys	Ser	Pro	Ala	Ala	Trp	Asn	Glu	Gly	Ala	Ala	Lys	
	275						280					285			

<210> 221  
 <211> 864  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 221  
 atgaaaacct tcttcaaaac cctttccgcc gccgcactcg cgetcatcct cgccgcctgc 60  
 ggcgggtcaaa aagatagcgc gcccgccgca tccgcttctg ccgccgccga caacggcgcg 120  
 gcgaaaaaag aaatcgtctt cggcacgacc gtcggcgact tcggcgatat ggtcaaagaa 180  
 caaatccaac ccgagctgga gaaaaaaggc tacaccgtca aactgggtcga gtttaccgac 240  
 tatgtgcgcc cgaatctggc attggctgag ggcgagttgg acatcaacgt cttccaacac 300  
 aaaccctatc ttgacgactt caaaaaagaa cacaatctgg acatcaccga agtcttccaa 360  
 gtgccgaccg cgcctttggg actgtaccgc ggcaagctga aatcgctgga agaagtcaaa 420  
 gacggcagca ccgtatccgc gcccaacgac ccgtccaact tcgccgcgt cttggtgatg 480  
 ctcgacgaac tgggttggat caaactcaaa gacggcatca atccgctgac cgcacccaaa 540  
 gcggacattg ccgaaaacct gaaaaacatc aaaatcgctg agcttgaagc cgcgcaactg 600  
 ccgcgtagcc ggcgcgacgt ggattttgcc gtcgtcaacg gcaactacgc cataagcagc 660  
 ggcattgaagc tgaccgaagc cctgttccaa gaaccgagct ttgcctatgt caactgggtc 720  
 gccgtcaaaa ccgccgacaa agacagccaa tggtttaaag acgtaaccga ggccataaac 780  
 tccgacgcgt tcaaagccta cgcgcacaaa cgcttcgagg gctacaaatc ccctgccgca 840  
 tggaatgaag ggcgcgcaaa ataa 864

<210> 222  
 <211> 287  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 222  
 Met Lys Thr Phe Phe Lys Thr Leu Ser Ala Ala Ala Leu Ala Leu Ile  
 1 5 10 15  
 Leu Ala Ala Cys Gly Gly Gln Lys Asp Ser Ala Pro Ala Ala Ser Ala  
 20 25 30  
 Ser Ala Ala Ala Asp Asn Gly Ala Ala Lys Lys Glu Ile Val Phe Gly  
 35 40 45  
 Thr Thr Val Gly Asp Phe Gly Asp Met Val Lys Glu Gln Ile Gln Pro  
 50 55 60  
 Glu Leu Glu Lys Lys Gly Tyr Thr Val Lys Leu Val Glu Phe Thr Asp  
 65 70 75 80  
 Tyr Val Arg Pro Asn Leu Ala Leu Ala Glu Gly Glu Leu Asp Ile Asn  
 85 90 95  
 Val Phe Gln His Lys Pro Tyr Leu Asp Asp Phe Lys Lys Glu His Asn  
 100 105 110  
 Leu Asp Ile Thr Glu Val Phe Gln Val Pro Thr Ala Pro Leu Gly Leu  
 115 120 125  
 Tyr Pro Gly Lys Leu Lys Ser Leu Glu Glu Val Lys Asp Gly Ser Thr  
 130 135 140  
 Val Ser Ala Pro Asn Asp Pro Ser Asn Phe Ala Arg Val Leu Val Met

145	150	155	160
Leu Asp Glu Leu Gly Trp Ile Lys Leu Lys Asp Gly Ile Asn Pro Leu	165	170	175
Thr Ala Ser Lys Ala Asp Ile Ala Glu Asn Leu Lys Asn Ile Lys Ile	180	185	190
Val Glu Leu Glu Ala Ala Gln Leu Pro Arg Ser Arg Ala Asp Val Asp	195	200	205
Phe Ala Val Val Asn Gly Asn Tyr Ala Ile Ser Ser Gly Met Lys Leu	210	215	220
Thr Glu Ala Leu Phe Gln Glu Pro Ser Phe Ala Tyr Val Asn Trp Ser	225	230	235
Ala Val Lys Thr Ala Asp Lys Asp Ser Gln Trp Leu Lys Asp Val Thr	245	250	255
Glu Ala Tyr Asn Ser Asp Ala Phe Lys Ala Tyr Ala His Lys Arg Phe	260	265	270
Glu Gly Tyr Lys Ser Pro Ala Ala Trp Asn Glu Gly Ala Ala Lys	275	280	285

<210> 223  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 223  
 nnnnnnnn

8

<210> 224  
 <211> 288  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 224  
 Met Lys Thr Phe Phe Lys Thr Leu Ser Thr Ala Ser Leu Ala Leu Ile  
 1 5 10 15  
 Leu Ala Ala Cys Gly Gly Gln Lys Asp Ser Ala Pro Ala Ala Ser Ala  
 20 25 30  
 Ala Ala Pro Ser Ala Asp Asn Gly Ala Ala Lys Lys Glu Ile Val Phe  
 35 40 45  
 Gly Thr Thr Val Gly Asp Phe Gly Asp Met Val Lys Glu Gln Ile Gln  
 50 55 60

Ala Glu Leu Glu Lys Lys Gly Tyr Thr Val Lys Leu Val Glu Phe Thr  
 65 70 75 80  
 Asp Tyr Val Arg Pro Asn Leu Ala Leu Ala Glu Gly Glu Leu Asp Ile  
 85 90 95  
 Asn Val Phe Gln His Lys Pro Tyr Leu Asp Asp Phe Lys Lys Glu His  
 100 105 110  
 Asn Leu Asp Ile Thr Glu Ala Phe Gln Val Pro Thr Ala Pro Leu Gly  
 115 120 125  
 Leu Tyr Pro Gly Lys Leu Lys Ser Leu Glu Glu Val Lys Asp Gly Ser  
 130 135 140  
 Thr Val Ser Ala Pro Asn Asp Pro Ser Asn Phe Ala Arg Ala Leu Val  
 145 150 155 160  
 Met Leu Asn Glu Leu Gly Trp Ile Lys Leu Lys Asp Gly Ile Asn Pro  
 165 170 175  
 Leu Thr Ala Ser Lys Ala Asp Ile Ala Glu Asn Leu Lys Asn Ile Lys  
 180 185 190  
 Ile Val Glu Leu Glu Ala Ala Gln Leu Pro Arg Ser Arg Ala Asp Val  
 195 200 205  
 Asp Phe Ala Val Val Asn Gly Asn Tyr Ala Ile Ser Ser Gly Met Lys  
 210 215 220  
 Leu Thr Glu Ala Leu Phe Gln Glu Pro Ser Phe Ala Tyr Val Asn Trp  
 225 230 235 240  
 Ser Ala Val Lys Thr Ala Asp Lys Asp Ser Gln Trp Leu Lys Asp Val  
 245 250 255  
 Thr Glu Ala Tyr Asn Ser Asp Ala Phe Lys Ala Tyr Ala His Lys Arg  
 260 265 270  
 Phe Glu Gly Tyr Lys Tyr Pro Ala Ala Trp Asn Glu Gly Ala Ala Lys  
 275 280 285

<210> 225

<211> 867

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 225

atgaaaacct	tcttcaaaac	cctttccgcc	gccgcactcg	cgtcctcct	cgcagcctgc	60
ggcgggtcaaa	aagacagcgc	gcccgcagcc	tctgccgcgc	ccccttctgc	cgataacggc	120
gcggcgaaaa	aagaaatcgt	cttcggcacg	accgtgggcg	acttcggcga	tatgggtcaaa	180
gaacaaatcc	aagccgagct	ggagaaaaaa	ggctacaccg	tcaaattggt	cgaatttacc	240
gactatgtgc	gcccgaatct	ggcattggcg	gagggcgagt	tggacatcaa	cgtcttccaa	300
cacaaaccct	atcttgacga	tttcaaaaaa	gaacacaacc	tggacatcac	cgaagccttc	360
caagtgcgca	ccgcgccttt	gggactgtat	ccgggcaaac	tgaaatcgct	ggaagaagtc	420
aaagacggca	gcaccgtatc	cgcgcccaac	gaccctgcca	acttcgcacg	cgccttggtg	480

atgctgaacg aactgggttg gatcaaactc aaagacggca tcaatccgct gaccgcatcc	540
aaagccgaca tcgcggaataa cctgaaaaac atcaaaatcg tcgagcttga agccgcacaa	600
ctgccgcgca gccgcgccga cgtggatttt gccgtcgtca acggcaacta cgccataagc	660
agcggcatga agctgaccga agccctgttc caagagccga gctttgccta tgtcaactgg	720
tctgccgtca aaaccgccga caaagacagc caatggctta aagacgtaac cgaggcctat	780
aactccgacg cgttcaaagc ctacgcgcac aaacgcttcg agggctacaa ataccctgcc	840
gcatggaatg aaggcgcagc caaataa	867

<210> 226  
 <211> 288  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 226

Met	Lys	Thr	Phe	Phe	Lys	Thr	Leu	Ser	Ala	Ala	Ala	Leu	Ala	Leu	Ile
1				5				10						15	
Leu	Ala	Ala	Cys	Gly	Gly	Gln	Lys	Asp	Ser	Ala	Pro	Ala	Ala	Ser	Ala
			20				25						30		
Ala	Ala	Pro	Ser	Ala	Asp	Asn	Gly	Ala	Ala	Lys	Lys	Glu	Ile	Val	Phe
		35					40					45			
Gly	Thr	Thr	Val	Gly	Asp	Phe	Gly	Asp	Met	Val	Lys	Glu	Gln	Ile	Gln
	50					55					60				
Ala	Glu	Leu	Glu	Lys	Lys	Gly	Tyr	Thr	Val	Lys	Leu	Val	Glu	Phe	Thr
65				70					75					80	
Asp	Tyr	Val	Arg	Pro	Asn	Leu	Ala	Leu	Ala	Glu	Gly	Glu	Leu	Asp	Ile
				85				90						95	
Asn	Val	Phe	Gln	His	Lys	Pro	Tyr	Leu	Asp	Asp	Phe	Lys	Lys	Glu	His
		100						105					110		
Asn	Leu	Asp	Ile	Thr	Glu	Ala	Phe	Gln	Val	Pro	Thr	Ala	Pro	Leu	Gly
	115					120						125			
Leu	Tyr	Pro	Gly	Lys	Leu	Lys	Ser	Leu	Glu	Glu	Val	Lys	Asp	Gly	Ser
	130				135						140				
Thr	Val	Ser	Ala	Pro	Asn	Asp	Pro	Ser	Asn	Phe	Ala	Arg	Ala	Leu	Val
145				150					155					160	
Met	Leu	Asn	Glu	Leu	Gly	Trp	Ile	Lys	Leu	Lys	Asp	Gly	Ile	Asn	Pro
			165					170						175	
Leu	Thr	Ala	Ser	Lys	Ala	Asp	Ile	Ala	Glu	Asn	Leu	Lys	Asn	Ile	Lys
		180					185						190		
Ile	Val	Glu	Leu	Glu	Ala	Ala	Gln	Leu	Pro	Arg	Ser	Arg	Ala	Asp	Val
	195						200					205			
Asp	Phe	Ala	Val	Val	Asn	Gly	Asn	Tyr	Ala	Ile	Ser	Ser	Gly	Met	Lys
	210					215					220				



Leu Thr Glu Ala Leu Phe Gln Glu Pro Ser Phe Ala Tyr Val Asn Trp  
 225 230 235 240

Ser Ala Val Lys Thr Ala Asp Lys Asp Ser Gln Trp Leu Lys Asp Val  
 245 250 255

Thr Glu Ala Tyr Asn Ser Asp Ala Phe Lys Ala Tyr Ala His Lys Arg  
 260 265 270

Phe Glu Gly Tyr Lys Tyr Pro Ala Ala Trp Asn Glu Gly Ala Ala Lys  
 275 280 285

<210> 227<sup>8</sup>  
 <211> 907  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 227  
 cctcgtcgtc ctcggcatgc tccagtttca aggggcgatt tactccaagg cgggtggaacg 60  
 tatgctcggc acggtcatcg ggctgggcgc ggggttgggc gttttatggc tgaaccagca 120  
 ttatttccac ggcaacctcc tcttctacct caccgtcggc acggcaagcg cactggccgg 180  
 ctgggcggcg gtcggcaaaa acggctacgt ccctmtgctg gcagggtga cgatgtgtat 240  
 gctcatcggc gacaacggca gcgaatggct cgacagcgga ctcatgcgcg ccatgaacgt 300  
 cctcatcggc gyggccatcg ccatcgccgc cgccaaactg ctgccgctga aatccacact 360  
 gatgtggcgt ttcattgctt cgcacaacct ggccgactgc agcaaaatga ttgccgaaat 420  
 cagcaacggc aggcgcattg cccgcgaacg cctcgaggag aacatggcga aaatgcgcca 480  
 aatcaacgca cgcattggtc aaagccgcag ccattctcgc gccacatcgg gcgaaagctg 540  
 catcagcccc gccatgatgg aagccatgca gcacgcccc acgtaaaatcg tcaacaccac 600  
 cgagctgctc ctgaccaccg ccgccaagct gcaatctccc aaactcaacg gcagcgaaat 660  
 ccggctgctt gaccgccact tcacactgct ccaaacgcag acacgcccgc cgcattccgca 720  
 tcgacaccgc catcaacccc gaactggaag ccctcgccga acacctccac taccaatggc 780  
 agggcttcct ctggctcagc accgatatgc gtcaggaaat ttccgcccct gtcattcctgc 840  
 tgcaacgcac ccgccgcaaa tggctggatg cccacgaacg ccaacacctg cgccaaagcc 900  
 tgcttga 907

<210> 228  
 <211> 301  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (72)..(72)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (195)..(195)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (224)..(224)  
 <223> Xaa= any amino acid

<400> 228

Pro	Arg	Arg	Pro	Arg	His	Ala	Pro	Val	Ser	Arg	Gly	Asp	Leu	Leu	Gln	1	5	10	15
Gly	Gly	Gly	Thr	Tyr	Ala	Arg	His	Gly	His	Arg	Ala	Gly	Arg	Gly	Phe	20	25	30	
Gly	Arg	Phe	Met	Ala	Glu	Pro	Ala	Leu	Phe	Pro	Arg	Gln	Pro	Pro	Leu	35	40	45	
Leu	Pro	His	Arg	Arg	His	Gly	Lys	Arg	Thr	Gly	Arg	Leu	Gly	Gly	Gly	50	55	60	
Arg	Gln	Lys	Arg	Leu	Arg	Pro	Xaa	Ala	Gly	Arg	Ala	Asp	Asp	Val	Tyr	65	70	75	80
Ala	His	Arg	Arg	Gln	Arg	Gln	Arg	Met	Ala	Arg	Gln	Arg	Thr	His	Ala	85	90	95	
Arg	His	Glu	Arg	Pro	His	Arg	Arg	Gly	His	Arg	His	Arg	Arg	Arg	Gln	100	105	110	
Thr	Ala	Ala	Ala	Glu	Ile	His	Thr	Asp	Val	Ala	Phe	His	Ala	Cys	Arg	115	120	125	
Gln	Pro	Gly	Arg	Leu	Gln	Gln	Asn	Asp	Cys	Arg	Asn	Gln	Gln	Arg	Gln	130	135	140	
Ala	His	Asp	Pro	Arg	Thr	Pro	Arg	Gly	Glu	His	Gly	Glu	Asn	Ala	Pro	145	150	155	160
Asn	Gln	Arg	Thr	His	Gly	Gln	Lys	Pro	Gln	Pro	Ser	Arg	Arg	His	Ile	165	170	175	
Gly	Arg	Lys	Leu	His	Gln	Pro	Arg	His	Asp	Gly	Ser	His	Ala	Ala	Arg	180	185	190	
Pro	Pro	Xaa	Asn	Arg	Gln	His	His	Arg	Ala	Ala	Pro	Asp	His	Arg	Arg	195	200	205	
Gln	Ala	Ala	Ile	Ser	Gln	Thr	Gln	Arg	Gln	Arg	Asn	Pro	Ala	Ala	Xaa	210	215	220	
Pro	Pro	Leu	His	Thr	Ala	Pro	Asn	Gln	Thr	Arg	Pro	Pro	His	Pro	His	225	230	235	240
Arg	His	Arg	His	Gln	Pro	Arg	Thr	Gly	Ser	Pro	Arg	Arg	Thr	Pro	Pro	245	250	255	
Leu	Pro	Met	Ala	Gly	Leu	Pro	Leu	Ala	Gln	His	Arg	Tyr	Ala	Ser	Gly	260	265	270	
Asn	Phe	Arg	Pro	Arg	His	Pro	Ala	Ala	Thr	His	Pro	Pro	Gln	Met	Ala	275	280	285	
Gly	Cys	Pro	Arg	Thr	Pro	Thr	Pro	Ala	Pro	Lys	Pro	Ala	290	295	300				

<210> 229  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 229  
 nnnnnnnnn

8

<210> 230  
 <211> 318  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 230

Met	Asp	Arg	Asp	Asp	Arg	Leu	Arg	Arg	Pro	Arg	His	Ala	Pro	Val	Pro
1				5					10					15	
Arg	Arg	Asp	Leu	Leu	Gln	Arg	Gly	Gly	Thr	Tyr	Ala	Arg	Tyr	Gly	His
			20					25					30		
Arg	Ala	Gly	Arg	Gly	Phe	Gly	Arg	Phe	Met	Ala	Glu	Pro	Ala	Leu	Phe
		35					40					45			
Pro	Arg	Gln	Pro	Pro	Leu	Leu	Pro	Asp	His	Arg	His	Gly	Lys	Arg	Thr
		50				55					60				
Gly	Arg	Leu	Gly	Gly	Gly	Arg	Gln	Lys	Arg	Leu	Arg	Pro	Tyr	Val	Gly
65					70					75					80
Gly	Ala	Asp	Asp	Val	His	Ala	His	Arg	Arg	Gln	Arg	Gln	Arg	Met	Ala
				85					90					95	
Arg	Gln	Arg	Pro	Asp	Ala	Arg	Asp	Glu	Arg	Pro	His	Arg	Arg	Arg	His
			100					105					110		
Arg	His	Cys	Arg	Arg	Gln	Thr	Ala	Ala	Ala	Glu	Ile	His	Thr	Asp	Val
		115					120					125			
Ala	Phe	His	Ala	Cys	Arg	Gln	Pro	Gly	Arg	Leu	Gln	Gln	Asn	Asp	Cys
	130					135					140				
Arg	Asn	Gln	Gln	Arg	Gln	Ala	Tyr	Asp	Ala	Arg	Thr	Phe	Gly	Ala	Glu
145					150				155					160	
Tyr	Gly	Gln	Asn	Ala	Pro	Asn	Gln	Arg	Thr	His	Gly	Gln	Lys	Pro	Gln
			165					170						175	
Pro	Pro	Arg	Arg	His	Ile	Gly	Arg	Lys	Pro	His	Gln	Pro	Leu	His	Asp
			180					185					190		
Gly	Ser	His	Ala	Ala	Arg	Pro	Pro	Gln	Asn	Arg	Gln	His	His	Arg	Ala

195	200	205
Ala Pro Asp His Arg Arg Gln Ala Ala Ile Ser Gln Thr Gln Arg Gln 210 215 220		
Arg Asn Pro Ala Ala Arg Pro Pro Leu His Thr Ala Pro Asn Arg Pro 225 230 235 240		
Ala Thr Asn Arg Arg Pro His Gln Arg Gln Thr Arg Pro Pro His Pro 245 250 255		
His Arg His Arg His Gln Pro Arg Thr Gly Ser Pro Arg Arg Thr Pro 260 265 270		
Pro Leu Pro Met Ala Gly Phe Pro Leu Ala Gln His Gln Tyr Ala Ser 275 280 285		
Gly Asn Phe Arg Pro Arg His Pro Pro Ala Thr His Pro Pro Gln Met 290 295 300		
Ala Gly Cys Pro Arg Thr Pro Thr Pro Ala Pro Lys Pro Ala 305 310 315		

<210> 231  
 <211> 567  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (22)..(22)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (40)..(40)  
 <223> N= Unknown

<400> 231	
gaaatcagcc tgcggtccga cnacaggccg gtttccgtgn cgaagcggcg ggattcggaa	60
cgttttctgc tgttgacgg cggcaacagc cggtcaagt gggcgtgggt ggaaaacggc	120
acgttcgcaa ccgtcggtag cgcgccgtac cgcgatttgt cgcctttggg cgcggagtgg	180
gcggaaaagg cggatggaaa tgtccgcata gtcggttgcg ctgtgtgcgg agaattcaaa	240
aaggcacaag tgcaggaaca gtcgccccga aaaatcgagt ggctgccgtc ttccgcacag	300
gctttggcat acgcaaccac taccgccacc ccgaagaaca cggttccgac cgctggttca	360
acgccttggg cagccgccgc ttcagccgca acgcctgcgt cgtcgtcagt tgcggcacgg	420
cggtaacggg tgacgcgctc accgatgacg gacattatct cggagaggaa ccatcatgcc	480
cggtttccac ctgatgaaag aatcgctcgc cgtccgaacc gccaacctca accggcacgc	540
cggtaagcgt tatectttcc cgaccgg	567

<210> 232  
 <211> 189  
 <212> PRT  
 <213> Neisseria meningitidis

<220>

<221> misc\_feature  
 <222> (8)..(8)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (14)..(14)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (102)..(102)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (156)..(156)  
 <223> Xaa= any amino acid

<400> 232  
 Glu Ile Ser Leu Arg Ser Asp Xaa Arg Pro Val Ser Val Xaa Lys Arg  
 1 5 10 15  
 Arg Asp Ser Glu Arg Phe Leu Leu Leu Asp Gly Gly Asn Ser Arg Leu  
 20 25 30  
 Lys Trp Ala Trp Val Glu Asn Gly Thr Phe Ala Thr Val Gly Ser Ala  
 35 40 45  
 Pro Tyr Arg Asp Leu Ser Pro Leu Gly Ala Glu Trp Ala Glu Lys Ala  
 50 55 60  
 Asp Gly Asn Val Arg Ile Val Gly Cys Ala Val Cys Gly Glu Phe Lys  
 65 70 75 80  
 Lys Ala Gln Val Gln Glu Gln Leu Ala Arg Lys Ile Glu Trp Leu Pro  
 85 90 95  
 Ser Ser Ala Gln Ala Xaa Gly Ile Arg Asn His Tyr Arg His Pro Glu  
 100 105 110  
 Glu His Gly Ser Asp Arg Trp Phe Asn Ala Leu Gly Ser Arg Arg Phe  
 115 120 125  
 Ser Arg Asn Ala Cys Val Val Val Ser Cys Gly Thr Ala Val Thr Val  
 130 135 140  
 Asp Ala Leu Thr Asp Asp Gly His Tyr Leu Gly Xaa Gly Thr Ile Met  
 145 150 155 160  
 Pro Gly Phe His Leu Met Lys Glu Ser Leu Ala Val Arg Thr Ala Asn  
 165 170 175  
 Leu Asn Arg His Ala Gly Lys Arg Tyr Pro Phe Pro Thr  
 180 185

<210> 233  
 <211> 1779  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 233  
 atgacggttt tgaagctttc gcactggcgg gtgttggcgg agcttgccga cggtttgccg 60  
 caacacgtct cgcaactggc gcgtatggcg gatatgaagc cgcagcagct caacggtttt 120  
 tggcagcaga tgccggcgca catacgcggg ctgttgcgcc aacacgacgg ctattggcgg 180  
 ctggtgcgcc cattggcggg tttcgatgcc gaaggtttgc gcgagctggg ggaaaggtcg 240  
 gggttttcaga cggcattgaa gcacgagtgc gcgtccagca acgacgagat actggaattg 300  
 gcgcggattg cgccggacaa ggcgacacaa accatatgcg tgacccacct gcaaagtaag 360  
 ggcagggggg ggcagggggc gaagtggtcg caccgtttgg gcgagtgtct gatgttcagt 420  
 tttggctggg tgtttgaccg gccgcagtat gagttgggtt cgctgtcgcc tgttgcggca 480  
 gtggcggtgc ggcgcgctt gtgcgcttta gggttggatg tgcagattaa gtggcccaat 540  
 gatttgggtt tgggacgcga caaattgggc ggcatctga ttgaaacggg caggacgggc 600  
 ggcaaaacgg ttgccgtggc cggatcggc atcaattttg tctgccccaa ggaaagtagaa 660  
 aatgccgctt ccgtgcaatc gctgtttcag acggcatcgc ggcggggcaa tgccgatgcc 720  
 gccgtgctgc tggaaacgct gttggtggaa ctggacgcgg tgttgttgca atatgcgcgg 780  
 gacggatttg cgccttttgt ggcggaatat caggctgcca accgcgacca cggcaaggcg 840  
 gtattgctgt tgcgcgacgg cgaaaccgtg ttcgaaggca cggttaaagg cgtggacgga 900  
 caaggcggtt tgcaactgga aacggcagag ggcaaacaga cggtcgtcag cggcgaaatc 960  
 agcctgcggg ccgacgacag gccggtttcc gtgccgaagc ggcgggattc ggaacgtttt 1020  
 ctgctgttgg acggcggcaa cagccggctc aagtgggcgt ggggtggaaaa cggcacgttc 1080  
 gcaaccgtcg gtacgcgcgc gtaccgcgat ttgtcgctt tgggcgcgga gtgggcggaa 1140  
 aaggcggatg gaaatgtccg catcgtcggt tgcgctgtgt gcggagaatt caaaaaggca 1200  
 caagtgcagg aacagctcgc ccgaaaaatc gagtggctgc cgtcttccgc acaggccttg 1260  
 ggcatacgcga accactaccg ccaccccgaa gaacacgggt ccgaccgctg gttcaacgcc 1320  
 ttgggcagcc gccgcttcag ccgcaacgcc tgcgtcgtcg tcagttgcgg cacggcggtg 1380  
 acggttgacg cgctcaccga tgacggacat tatctcgggg gaaccatcat gcccggtttc 1440  
 cacctgatga aagaatcgct cgccgtccga accgccaaacc tcaaccggca cgcgggtaag 1500  
 cgttatcctt tcccaccac aacgggcaat gccgtcgcca gcggcatgat ggatgcgggt 1560  
 tgccgctcgg ttatgatgat gcacgggcgt ttgaaagaaa aaaccggggc gggcaagcct 1620  
 gtcgatgtca tcattaccgg cggcggcgcg gcaaaagttg ccgaagccct gccgcctgca 1680  
 tttttggcgg aaaataccgt gcgcgtggcg gacaacctcg tcatttacgg gttgttgaac 1740  
 atgattgccg ccgaaggcag ggaatatgaa catatttaa 1779

<210> 234  
 <211> 592  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 234  
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 Asp Gly Leu Pro Gln His Val Ser Gln Leu Ala Arg Met Ala Asp Met  
 20 25 30  
 Lys Pro Gln Gln Leu Asn Gly Phe Trp Gln Gln Met Pro Ala His Ile  
 35 40 45  
 Arg Gly Leu Leu Arg Gln His Asp Gly Tyr Trp Arg Leu Val Arg Pro  
 50 55 60  
 Leu Ala Val Phe Asp Ala Glu Gly Leu Arg Glu Leu Gly Glu Arg Ser

65		70		75		80
Gly Phe Gln Thr	Ala Leu Lys His Glu Cys Ala Ser Ser Asn Asp Glu					
	85			90		95
Ile Leu Glu Leu	Ala Arg Ile Ala Pro Asp Lys Ala His Lys Thr Ile					
	100		105		110	
Cys Val Thr His	Leu Gln Ser Lys Gly Arg Gly Arg Gln Gly Arg Lys					
	115		120		125	
Trp Ser His Arg	Leu Gly Glu Cys Leu Met Phe Ser Phe Gly Trp Val					
	130		135		140	
Phe Asp Arg Pro	Gln Tyr Glu Leu Gly Ser Leu Ser Pro Val Ala Ala					
	145		150		155	160
Val Ala Cys Arg	Arg Ala Leu Ser Arg Leu Gly Leu Asp Val Gln Ile					
	165		170		175	
Lys Trp Pro Asn	Asp Leu Val Val Gly Arg Asp Lys Leu Gly Gly Ile					
	180		185		190	
Leu Ile Glu Thr	Val Arg Thr Gly Gly Lys Thr Val Ala Val Val Gly					
	195		200		205	
Ile Gly Ile Asn	Phe Val Leu Pro Lys Glu Val Glu Asn Ala Ala Ser					
	210		215		220	
Val Gln Ser Leu	Phe Gln Thr Ala Ser Arg Arg Gly Asn Ala Asp Ala					
	225		230		235	240
Ala Val Leu Leu	Glu Thr Leu Leu Val Glu Leu Asp Ala Val Leu Leu					
	245		250		255	
Gln Tyr Ala Arg	Asp Gly Phe Ala Pro Phe Val Ala Glu Tyr Gln Ala					
	260		265		270	
Ala Asn Arg Asp	His Gly Lys Ala Val Leu Leu Leu Arg Asp Gly Glu					
	275		280		285	
Thr Val Phe Glu	Gly Thr Val Lys Gly Val Asp Gly Gln Gly Val Leu					
	290		295		300	
His Leu Glu Thr	Ala Glu Gly Lys Gln Thr Val Val Ser Gly Glu Ile					
	305		310		315	320
Ser Leu Arg Ser	Asp Asp Arg Pro Val Ser Val Pro Lys Arg Arg Asp					
	325		330		335	
Ser Glu Arg Phe	Leu Leu Leu Asp Gly Gly Asn Ser Arg Leu Lys Trp					
	340		345		350	
Ala Trp Val Glu	Asn Gly Thr Phe Ala Thr Val Gly Ser Ala Pro Tyr					
	355		360		365	

Arg Asp Leu Ser Pro Leu Gly Ala Glu Trp Ala Glu Lys Ala Asp Gly  
 370 375 380  
 Asn Val Arg Ile Val Gly Cys Ala Val Cys Gly Glu Phe Lys Lys Ala  
 385 390 395 400  
 Gln Val Gln Glu Gln Leu Ala Arg Lys Ile Glu Trp Leu Pro Ser Ser  
 405 410 415  
 Ala Gln Ala Leu Gly Ile Arg Asn His Tyr Arg His Pro Glu Glu His  
 420 425 430  
 Gly Ser Asp Arg Trp Phe Asn Ala Leu Gly Ser Arg Arg Phe Ser Arg  
 435 440 445  
 Asn Ala Cys Val Val Val Ser Cys Gly Thr Ala Val Thr Val Asp Ala  
 450 455 460  
 Leu Thr Asp Asp Gly His Tyr Leu Gly Gly Thr Ile Met Pro Gly Phe  
 465 470 475 480  
 His Leu Met Lys Glu Ser Leu Ala Val Arg Thr Ala Asn Leu Asn Arg  
 485 490 495  
 His Ala Gly Lys Arg Tyr Pro Phe Pro Thr Thr Thr Gly Asn Ala Val  
 500 505 510  
 Ala Ser Gly Met Met Asp Ala Val Cys Gly Ser Val Met Met Met His  
 515 520 525  
 Gly Arg Leu Lys Glu Lys Thr Gly Ala Gly Lys Pro Val Asp Val Ile  
 530 535 540  
 Ile Thr Gly Gly Gly Ala Ala Lys Val Ala Glu Ala Leu Pro Pro Ala  
 545 550 555 560  
 Phe Leu Ala Glu Asn Thr Val Arg Val Ala Asp Asn Leu Val Ile Tyr  
 565 570 575  
 Gly Leu Leu Asn Met Ile Ala Ala Glu Gly Arg Glu Tyr Glu His Ile  
 580 585 590

<210> 235  
 <211> 1779  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 235  
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 tggcagcaga tgccggcgca catacgcggg ctgttgcgcc aacacgacgg ctattggcgg 180  
 ctggtgcgcc cattggcggg tttcgatgcc gaaggtttgc gcgagctggg ggaaaggctg 240  
 ggttttcaga cggcattgaa gcacgagtg gcgtccagca acgacgagat actggaattg 300  
 gcgcggattg cgccggacaa ggcgcacaaa accatatgtg tgaccacact gcaaagtaag 360  
 ggcagggggc ggcagggggc gaagtggtcg caccgtttgg gcgagtgtct gatgttcagt 420  
 tttggctggg tgtttgaccg gccgcagtat gagttgggtt cgctgtcgcc tgttgcgga 480



gtggcggtgcc	ggcgcgccctt	gtcgcggtttg	ggtttgaaaa	cgcaaatcaa	gtggccaaac	540
gatttggctcg	tccgacgcga	caaattgggc	ggcattctga	ttgaaacggt	caggacgggc	600
ggcaaaacgg	ttgccgtggt	cggtatcggc	atcaatttcg	tgctgcccaa	ggaagtggaa	660
aacgccgctt	ccgtgcaatc	gctgtttcag	acggcatcgc	ggcggggaaa	tgccgatgcc	720
gccgtgttgc	tggaaacgct	gttggcggaa	cttgatgcgg	tgttgttgca	atatgcgcgg	780
gacggatttg	cgccttttgc	ggcggaatat	caggctgcca	accgcgacca	cggcaaggcg	840
gtattgctgt	tgcgcgacgg	cgaaaccgtg	ttcgaaggca	cggttaaagg	cgtggacgga	900
caaggcgctt	tgcacttgga	aacggcagag	ggcaaacaga	cggtcgtcag	cggcgaaatc	960
agcctgcggt	ccgacgacag	gccgggtttcc	gtgccgaagc	ggcgggattc	ggaacgtttt	1020
ctgctgttgg	acggcgggcaa	cagccggctc	aagtgggctg	gggtggaaaa	cggcacgttc	1080
gcaaccgctcg	gtagcgcgcg	gtaccgcgat	ttgtcgcctt	tgggcgcgga	gtgggcggaa	1140
aaggtggatg	gaaatgtccg	catcgtcggg	tgcgccgtgt	gcggagaatt	caaaaaggca	1200
caagtgcagg	aacagctcgc	ccgaaaaatc	gagtggctgc	cgtcttccgc	acaggctttg	1260
ggcatacgca	accactaccg	ccaccccgaa	gaacacgggt	ccgaccgctg	gttcaacgcc	1320
ttgggcagcc	gccgcttcag	ccgcaacgcc	tgcgtcgtcg	tcagttgcgg	cacggcggtg	1380
acggttgacg	cgctcaccga	tgacggacat	tatctcgggg	gaaccatcat	gcccggtttc	1440
cacctgatga	aagaatcgct	cgcggtccga	accgcccaacc	tcaaccggca	cgcgggtaag	1500
cgttatcctt	tcccgaaccac	aacgggcaat	gccgtcgcca	gcggcatgat	ggatgcgggt	1560
tgcggtcgcg	ttatgatgat	gcacgggcgt	ttgaaagaaa	aaaccggggc	gggcaagcct	1620
gtcgatgtca	tcattaccgg	cggcggcgcg	gcaaaagttg	ccgaagccct	gccgcctgca	1680
tttttggcgg	aaaataccgt	gcgcgtggcg	gacaacctcg	tcattcacgg	gctgctgaac	1740
ctgattgccg	ccgaaggcgg	ggaatcggaa	catacttaa			1779

<210> 236  
 <211> 592  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 236

Met	Thr	Val	Leu	Lys	Pro	Ser	His	Trp	Arg	Val	Leu	Ala	Glu	Leu	Ala
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Asp	Gly	Leu	Pro	Gln	His	Val	Ser	Gln	Leu	Ala	Arg	Met	Ala	Asp	Met
			20					25					30		
Lys	Pro	Gln	Gln	Leu	Asn	Gly	Phe	Trp	Gln	Gln	Met	Pro	Ala	His	Ile
			35				40					45			
Arg	Gly	Leu	Leu	Arg	Gln	His	Asp	Gly	Tyr	Trp	Arg	Leu	Val	Arg	Pro
	50					55					60				
Leu	Ala	Val	Phe	Asp	Ala	Glu	Gly	Leu	Arg	Glu	Leu	Gly	Glu	Arg	Ser
65					70				75					80	
Gly	Phe	Gln	Thr	Ala	Leu	Lys	His	Glu	Cys	Ala	Ser	Ser	Asn	Asp	Glu
				85					90					95	
Ile	Leu	Glu	Leu	Ala	Arg	Ile	Ala	Pro	Asp	Lys	Ala	His	Lys	Thr	Ile
		100						105					110		
Cys	Val	Thr	His	Leu	Gln	Ser	Lys	Gly	Arg	Gly	Arg	Gln	Gly	Arg	Lys
		115					120					125			
Trp	Ser	His	Arg	Leu	Gly	Glu	Cys	Leu	Met	Phe	Ser	Phe	Gly	Trp	Val
	130					135						140			

Phe	Asp	Arg	Pro	Gln	Tyr	Glu	Leu	Gly	Ser	Leu	Ser	Pro	Val	Ala	Ala	
145					150					155					160	
Val	Ala	Cys	Arg	Arg	Ala	Leu	Ser	Arg	Leu	Gly	Leu	Lys	Thr	Gln	Ile	
				165					170					175		
Lys	Trp	Pro	Asn	Asp	Leu	Val	Val	Gly	Arg	Asp	Lys	Leu	Gly	Gly	Ile	
			180					185					190			
Leu	Ile	Glu	Thr	Val	Arg	Thr	Gly	Gly	Lys	Thr	Val	Ala	Val	Val	Gly	
	195						200					205				
Ile	Gly	Ile	Asn	Phe	Val	Leu	Pro	Lys	Glu	Val	Glu	Asn	Ala	Ala	Ser	
	210					215					220					
Val	Gln	Ser	Leu	Phe	Gln	Thr	Ala	Ser	Arg	Arg	Gly	Asn	Ala	Asp	Ala	
225					230					235					240	
Ala	Val	Leu	Leu	Glu	Thr	Leu	Leu	Ala	Glu	Leu	Asp	Ala	Val	Leu	Leu	
				245					250					255		
Gln	Tyr	Ala	Arg	Asp	Gly	Phe	Ala	Pro	Phe	Val	Ala	Glu	Tyr	Gln	Ala	
			260					265						270		
Ala	Asn	Arg	Asp	His	Gly	Lys	Ala	Val	Leu	Leu	Leu	Arg	Asp	Gly	Glu	
		275					280					285				
Thr	Val	Phe	Glu	Gly	Thr	Val	Lys	Gly	Val	Asp	Gly	Gln	Gly	Val	Leu	
	290					295					300					
His	Leu	Glu	Thr	Ala	Glu	Gly	Lys	Gln	Thr	Val	Val	Ser	Gly	Glu	Ile	
305					310					315					320	
Ser	Leu	Arg	Ser	Asp	Asp	Arg	Pro	Val	Ser	Val	Pro	Lys	Arg	Arg	Asp	
				325					330					335		
Ser	Glu	Arg	Phe	Leu	Leu	Leu	Asp	Gly	Gly	Asn	Ser	Arg	Leu	Lys	Trp	
			340					345					350			
Ala	Trp	Val	Glu	Asn	Gly	Thr	Phe	Ala	Thr	Val	Gly	Ser	Ala	Pro	Tyr	
		355					360					365				
Arg	Asp	Leu	Ser	Pro	Leu	Gly	Ala	Glu	Trp	Ala	Glu	Lys	Val	Asp	Gly	
	370					375					380					
Asn	Val	Arg	Ile	Val	Gly	Cys	Ala	Val	Cys	Gly	Glu	Phe	Lys	Lys	Ala	
385					390					395					400	
Gln	Val	Gln	Glu	Gln	Leu	Ala	Arg	Lys	Ile	Glu	Trp	Leu	Pro	Ser	Ser	
				405					410					415		
Ala	Gln	Ala	Leu	Gly	Ile	Arg	Asn	His	Tyr	Arg	His	Pro	Glu	Glu	His	
			420					425					430			
Gly	Ser	Asp	Arg	Trp	Phe	Asn	Ala	Leu	Gly	Ser	Arg	Arg	Phe	Ser	Arg	
		435					440					445				

Asn Ala Cys Val Val Val Ser Cys Gly Thr Ala Val Thr Val Asp Ala  
 450 455 460  
 Leu Thr Asp Asp Gly His Tyr Leu Gly Gly Thr Ile Met Pro Gly Phe  
 465 470 475 480  
 His Leu Met Lys Glu Ser Leu Ala Val Arg Thr Ala Asn Leu Asn Arg  
 485 490 495  
 His Ala Gly Lys Arg Tyr Pro Phe Pro Thr Thr Thr Gly Asn Ala Val  
 500 505 510  
 Ala Ser Gly Met Met Asp Ala Val Cys Gly Ser Val Met Met Met His  
 515 520 525  
 Gly Arg Leu Lys Glu Lys Thr Gly Ala Gly Lys Pro Val Asp Val Ile  
 530 535 540  
 Ile Thr Gly Gly Gly Ala Ala Lys Val Ala Glu Ala Leu Pro Pro Ala  
 545 550 555 560  
 Phe Leu Ala Glu Asn Thr Val Arg Val Ala Asp Asn Leu Val Ile His  
 565 570 575  
 Gly Leu Leu Asn Leu Ile Ala Ala Glu Gly Gly Glu Ser Glu His Thr  
 580 585 590

<210> 237  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 237  
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8

<210> 238  
 <211> 455  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 238  
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 Ser Leu Ser Pro Val Ala Ala Leu Ala Cys Arg Arg Ala Leu Gly Cys  
 20 25 30  
 Leu Gly Leu Glu Thr Gln Ile Lys Trp Pro Asn Asp Leu Val Val Gly  
 35 40 45  
 Arg Asp Lys Leu Gly Gly Ile Leu Ile Glu Thr Val Arg Ala Gly Gly

50					55					60					
Lys	Thr	Val	Ala	Val	Val	Gly	Ile	Gly	Ile	Asn	Phe	Val	Leu	Pro	Lys
65					70					75					80
Glu	Val	Glu	Asn	Ala	Ala	Ser	Val	Gln	Ser	Leu	Phe	Gln	Thr	Ala	Ser
			85						90					95	
Arg	Arg	Gly	Asn	Ala	Asp	Ala	Ala	Val	Leu	Leu	Glu	Thr	Leu	Leu	Ala
			100					105					110		
Glu	Leu	Gly	Ala	Val	Leu	Glu	Gln	Tyr	Ala	Glu	Glu	Gly	Phe	Ala	Pro
		115					120					125			
Phe	Leu	Asn	Glu	Tyr	Glu	Thr	Ala	Asn	Arg	Asp	His	Gly	Lys	Ala	Val
	130					135					140				
Leu	Leu	Leu	Arg	Asp	Gly	Glu	Thr	Val	Cys	Glu	Gly	Thr	Val	Lys	Gly
145					150					155					160
Val	Asp	Gly	Arg	Gly	Val	Leu	His	Leu	Glu	Thr	Ala	Glu	Gly	Glu	Gln
				165					170					175	
Thr	Val	Val	Ser	Gly	Glu	Ile	Ser	Leu	Arg	Pro	Asp	Asn	Arg	Ser	Val
			180					185					190		
Ser	Val	Pro	Lys	Arg	Pro	Asp	Ser	Glu	Arg	Phe	Leu	Leu	Leu	Glu	Gly
		195					200					205			
Gly	Asn	Ser	Arg	Leu	Lys	Trp	Ala	Trp	Val	Glu	Asn	Gly	Thr	Phe	Ala
	210					215					220				
Thr	Val	Gly	Ser	Ala	Pro	Tyr	Arg	Asp	Leu	Ser	Pro	Leu	Gly	Ala	Glu
225					230					235					240
Trp	Ala	Glu	Lys	Ala	Asp	Gly	Asn	Val	Arg	Ile	Val	Gly	Cys	Ala	Val
				245					250					255	
Cys	Gly	Glu	Ser	Lys	Lys	Ala	Gln	Val	Lys	Glu	Gln	Leu	Ala	Arg	Lys
			260					265					270		
Ile	Glu	Trp	Leu	Pro	Ser	Ser	Ala	Gln	Ala	Leu	Gly	Ile	Arg	Asn	His
	275						280					285			
Tyr	Arg	His	Pro	Glu	Glu	His	Gly	Ser	Asp	Arg	Trp	Phe	Asn	Ala	Leu
	290					295					300				
Gly	Ser	Arg	Arg	Phe	Ser	Arg	Asn	Ala	Cys	Val	Val	Val	Ser	Cys	Gly
305					310					315					320
Thr	Ala	Val	Thr	Val	Asp	Ala	Leu	Thr	Asp	Asp	Gly	His	Tyr	Leu	Gly
				325					330					335	
Gly	Thr	Ile	Met	Pro	Gly	Phe	His	Leu	Met	Lys	Glu	Ser	Leu	Ala	Val
			340					345						350	

Arg Thr Ala Asn Leu Asn Arg Pro Ala Gly Lys Arg Tyr Pro Phe Pro  
355 360 365

Thr Thr Thr Gly Asn Ala Val Ala Ser Gly Met Met Asp Ala Val Cys  
370 375 380

Gly Ser Ile Met Met Met His Gly Arg Leu Lys Glu Lys Asn Gly Ala  
385 390 395 400

Gly Lys Pro Val Asp Val Ile Ile Thr Gly Gly Gly Ala Ala Lys Val  
405 410 415

Ala Glu Ala Leu Pro Pro Ala Phe Leu Ala Glu Asn Thr Val Arg Val  
420 425 430

Ala Asp Asn Leu Val Ile His Gly Leu Leu Asn Leu Ile Ala Ala Glu  
435 440 445

Gly Gly Glu Ser Glu His Ala  
450 455

<210> 239  
<211> 1779  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 239  
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tggcagcaga tgcggcgca tatacgcggg ctgttgccgc aacacgacgg ctattggcgg 180  
ctggtgccc ccttggcggg ttctgatgcc gaaggtttgc gcgatctggg ggaaaggctg 240  
ggttttcaga cggcattgaa gcacgagtc gcgtccagca acgacgagat actggaattg 300  
gcgcggattg cgcgggacaa ggcgcacaaa accatatgcg tgaccacct gcaaagtaag 360  
ggcagggggc ggcagggggc gaagtggctg caccgtttgg gcgagtgcct gatgttcagt 420  
ttcggctggg cgtttgaccg gccgcagtat gagttgggtt cgctgtccgc tgttgccgca 480  
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aacgccgctt ccgtgcagtc gctgtttcag acggcatcgc ggcggggcaa tgcgatgcc 720  
gccgtattgc tggaacatt gcttgccgaa ctgggcgcgg tgttggaaaca atatgcggaa 780  
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gcaaccgtgg gcagcgcgcc gtaccgcgat ttgtcgcctt tgggcgcgga gtgggcggaa 1140  
aaggcggatg gaaatgtccg catcgtcggg tgcgcgctgt gcggagaatc caaaaaggca 1200  
caagtgaagg aacagctcgc ccgaaaaatc gagggtgctc cgtcttcgc acaggctttg 1260  
ggcatacga accactaccg ccaccccgaa gaacacggtt ccgaccgttg gttcaacgcc 1320  
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acggttgacg cgctcacgca tgacggacat tatctcggcg gaaccatcat gcccggttc 1440  
cacctgatga aagaatcgct cgccgtccga accgccaaac tcaaccgccc cgccggcaaa 1500  
cgttaccctt tcccaccac aacgggcaac gccgtcgcaa gcggcatgat ggacgcggtt 1560  
tgccgctcga taatgatgat gcacggcgt ttgaaagaaa aaaacggcgc gggcaagcct 1620  
gtcgatgtca tcattaccgg cggcggcgcg gcgaaagtcg ccgaagcct gccgcctgca 1680  
tttttggcgg aaaataccgt gcgcgtggcg gacaacctcg tcatccacgg gctgctgaac 1740

ctgattgccg ccgaaggcgg ggaatcgga caccgttaa

1779

<210> 240

<211> 592

<212> PRT

<213> Neisseria gonorrhoeae

<400> 240

Met	Thr	Val	Leu	Lys	Pro	Ser	His	Trp	Arg	Val	Leu	Ala	Glu	Leu	Ala	
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Asp	Gly	Leu	Pro	Gln	His	Val	Ser	Gln	Leu	Ala	Arg	Glu	Ala	Asp	Met	
			20					25					30			
Lys	Pro	Gln	Gln	Leu	Asn	Gly	Phe	Trp	Gln	Gln	Met	Pro	Ala	His	Ile	
			35				40					45				
Arg	Gly	Leu	Leu	Arg	Gln	His	Asp	Gly	Tyr	Trp	Arg	Leu	Val	Arg	Pro	
	50					55					60					
Leu	Ala	Val	Phe	Asp	Ala	Glu	Gly	Leu	Arg	Asp	Leu	Gly	Glu	Arg	Ser	
65					70					75					80	
Gly	Phe	Gln	Thr	Ala	Leu	Lys	His	Glu	Cys	Ala	Ser	Ser	Asn	Asp	Glu	
				85					90					95		
Ile	Leu	Glu	Leu	Ala	Arg	Ile	Ala	Pro	Asp	Lys	Ala	His	Lys	Thr	Ile	
			100					105					110			
Cys	Val	Thr	His	Leu	Gln	Ser	Lys	Gly	Arg	Gly	Arg	Gln	Gly	Arg	Lys	
		115					120					125				
Trp	Ser	His	Arg	Leu	Gly	Glu	Cys	Leu	Met	Phe	Ser	Phe	Gly	Trp	Ala	
	130					135						140				
Phe	Asp	Arg	Pro	Gln	Tyr	Glu	Leu	Gly	Ser	Leu	Ser	Pro	Val	Ala	Ala	
145					150					155					160	
Leu	Ala	Cys	Arg	Arg	Ala	Leu	Gly	Cys	Leu	Gly	Leu	Glu	Thr	Gln	Ile	
			165					170						175		
Lys	Trp	Pro	Asn	Asp	Leu	Val	Val	Gly	Arg	Asp	Lys	Leu	Gly	Gly	Ile	
		180						185					190			
Leu	Ile	Glu	Thr	Val	Arg	Ala	Gly	Gly	Lys	Thr	Val	Ala	Val	Val	Gly	
	195						200					205				
Ile	Gly	Ile	Asn	Phe	Val	Leu	Pro	Lys	Glu	Val	Glu	Asn	Ala	Ala	Ser	
	210					215					220					
Val	Gln	Ser	Leu	Phe	Gln	Thr	Ala	Ser	Arg	Arg	Gly	Asn	Ala	Asp	Ala	
225					230					235					240	
Ala	Val	Leu	Leu	Glu	Thr	Leu	Leu	Ala	Glu	Leu	Gly	Ala	Val	Leu	Glu	
			245						250					255		

Gln	Tyr	Ala	Glu	Glu	Gly	Phe	Ala	Pro	Phe	Leu	Asn	Glu	Tyr	Glu	Thr	260	265	270
Ala	Asn	Arg	Asp	His	Gly	Lys	Ala	Val	Leu	Leu	Leu	Arg	Asp	Gly	Glu	275	280	285
Thr	Val	Cys	Glu	Gly	Thr	Val	Lys	Gly	Val	Asp	Gly	Arg	Gly	Val	Leu	290	295	300
His	Leu	Glu	Thr	Ala	Glu	Gly	Glu	Gln	Thr	Val	Val	Ser	Gly	Glu	Ile	305	310	315
Ser	Leu	Arg	Pro	Asp	Asn	Arg	Ser	Val	Ser	Val	Pro	Lys	Arg	Pro	Asp	325	330	335
Ser	Glu	Arg	Phe	Leu	Leu	Leu	Glu	Gly	Gly	Asn	Ser	Arg	Leu	Lys	Trp	340	345	350
Ala	Trp	Val	Glu	Asn	Gly	Thr	Phe	Ala	Thr	Val	Gly	Ser	Ala	Pro	Tyr	355	360	365
Arg	Asp	Leu	Ser	Pro	Leu	Gly	Ala	Glu	Trp	Ala	Glu	Lys	Ala	Asp	Gly	370	375	380
Asn	Val	Arg	Ile	Val	Gly	Cys	Ala	Val	Cys	Gly	Glu	Ser	Lys	Lys	Ala	385	390	395
Gln	Val	Lys	Glu	Gln	Leu	Ala	Arg	Lys	Ile	Glu	Trp	Leu	Pro	Ser	Ser	405	410	415
Ala	Gln	Ala	Leu	Gly	Ile	Arg	Asn	His	Tyr	Arg	His	Pro	Glu	Glu	His	420	425	430
Gly	Ser	Asp	Arg	Trp	Phe	Asn	Ala	Leu	Gly	Ser	Arg	Arg	Phe	Ser	Arg	435	440	445
Asn	Ala	Cys	Val	Val	Val	Ser	Cys	Gly	Thr	Ala	Val	Thr	Val	Asp	Ala	450	455	460
Leu	Thr	Asp	Asp	Gly	His	Tyr	Leu	Gly	Gly	Thr	Ile	Met	Pro	Gly	Phe	465	470	475
His	Leu	Met	Lys	Glu	Ser	Leu	Ala	Val	Arg	Thr	Ala	Asn	Leu	Asn	Arg	485	490	495
Pro	Ala	Gly	Lys	Arg	Tyr	Pro	Phe	Pro	Thr	Thr	Thr	Gly	Asn	Ala	Val	500	505	510
Ala	Ser	Gly	Met	Met	Asp	Ala	Val	Cys	Gly	Ser	Ile	Met	Met	Met	His	515	520	525
Gly	Arg	Leu	Lys	Glu	Lys	Asn	Gly	Ala	Gly	Lys	Pro	Val	Asp	Val	Ile	530	535	540
Ile	Thr	Gly	Gly	Gly	Ala	Ala	Lys	Val	Ala	Glu	Ala	Leu	Pro	Pro	Ala	545	550	555
																		560

Phe Leu Ala Glu Asn Thr Val Arg Val Ala Asp Asn Leu Val Ile His  
565 570 575

Gly Leu Leu Asn Leu Ile Ala Ala Glu Gly Gly Glu Ser Glu His Ala  
580 585 590

<210> 241  
<211> 648  
<212> DNA  
<213> Neisseria meningitidis

<400> 241  
atgttttacc aaatccttgc cctgattatc tggagcagct cgttttattgc cgccaaatat 60  
gtctatggcg gcatcgatcc cgcattgatg gtcggcgtgc gcctgctaata tgccgcgctg 120  
cctgcactgc ccgcctgccg ccgtcatgtc ggcaagattc cgcgtgagga atggaagccg 180  
ttgctgattg tgcgttcgt caactatgtg ctgaccctgc tgcttcagtt tgctcgggtg 240  
aaatacactt ccgccgccag cgcacgggtc attgtcggac tcgagccgct gctgatgggtg 300  
tttgtcggac acttttttctt caacgacaaa gcgcgtgcct accactggat atgcggcgcg 360  
gcggcatttg ccggtgtcgc gctgctgatg gcgggcgggtg cggaagaggg cggcgaagtc 420  
ggctggttcg gctgcctgct ggtgttggtg gcgggcggcg gcttttgtgc cgctatgcgt 480  
ccgacgcaaa ggctgattgc acgcatcggc gcaccggcat tcacatctgt ttccattgcc 540  
gccgcacgt tgatgtgcct gccgttttcg cttgcttttg cgcaaagtta taccgtggac 600  
tggagcgtcg ggatggtatt gtcgctgctg tatttggtt tgggggtgc 648

<210> 242  
<211> 216  
<212> PRT  
<213> Neisseria meningitidis

<400> 242  
Met Phe Tyr Gln Ile Leu Ala Leu Ile Ile Trp Ser Ser Ser Phe Ile  
1 5 10 15  
Ala Ala Lys Tyr Val Tyr Gly Gly Ile Asp Pro Ala Leu Met Val Gly  
20 25 30  
Val Arg Leu Leu Ile Ala Ala Leu Pro Ala Leu Pro Ala Cys Arg Arg  
35 40 45  
His Val Gly Lys Ile Pro Arg Glu Glu Trp Lys Pro Leu Leu Ile Val  
50 55 60  
Ser Phe Val Asn Tyr Val Leu Thr Leu Leu Leu Gln Phe Val Gly Leu  
65 70 75 80  
Lys Tyr Thr Ser Ala Ala Ser Ala Ser Val Ile Val Gly Leu Glu Pro  
85 90 95  
Leu Leu Met Val Phe Val Gly His Phe Phe Phe Asn Asp Lys Ala Arg  
100 105 110  
Ala Tyr His Trp Ile Cys Gly Ala Ala Ala Phe Ala Gly Val Ala Leu  
115 120 125  
Leu Met Ala Gly Gly Ala Glu Glu Gly Gly Glu Val Gly Trp Phe Gly  
130 135 140



Cys Leu Leu Val Leu Leu Ala Gly Ala Gly Phe Cys Ala Ala Met Arg  
145 150 155 160

Pro Thr Gln Arg Leu Ile Ala Arg Ile Gly Ala Pro Ala Phe Thr Ser  
165 170 175

Val Ser Ile Ala Ala Ala Ser Leu Met Cys Leu Pro Phe Ser Leu Ala  
180 185 190

Leu Ala Gln Ser Tyr Thr Val Asp Trp Ser Val Gly Met Val Leu Ser  
195 200 205

Leu Leu Tyr Leu Gly Leu Gly Cys  
210 215

<210> 243

<211> 855

<212> DNA

<213> Neisseria meningitidis

<400> 243

atgttttacc	aaatccttgc	cctgattatc	tggagcagct	cgttttattgc	cgccaaatat	60
gtctatggcg	gcacgatcc	cgcattgatg	gtcggcgtgc	gcctgctaata	tgccgcgctg	120
cctgcactgc	ccgcctgccg	ccgtcatgtc	ggcaagattc	cgcgtagga	atggaagccg	180
ttgctgattg	tgctgttcgt	caactatgtg	ctgacctgc	tgcttcagtt	tgctgggttg	240
aaatacactt	ccgccgccag	cgcacgggtc	attgtcggac	tcgagccgct	gctgatgggtg	300
tttgtcggac	actttttctt	caacgacaaa	gcgcgtgcct	accactggat	atgcggcgcg	360
gcggcatttg	ccggtgtcgc	gctgctgatg	gcgggcgggtg	cggaagaggg	cggcgaagtc	420
ggctgggttcg	gctgcctgct	ggtgttggtg	gcgggcgggtg	gcttttggtg	cgctatgcgt	480
ccgacgcaaa	ggctgattgc	acgcacgggc	gcacccggcat	tcacatctgt	ttccattgcc	540
gccgcacgt	tgatgtgcct	gccgttttcg	cttgcttttg	cgcaaagtta	taccgtggac	600
tggagcgtcg	ggatggtatt	gtcgtgctg	tatttggtt	tgggtgcgg	ctggtacgcc	660
tattggctgt	ggaacaagg	gatgagccgt	gttcctgcc	atgtttcggg	actgttgatt	720
tcgctcgaac	ccgtcgtcgg	cgtgctgctg	gcggttttga	ttttgggcga	acacctgtcg	780
cccgtgtccg	ccttgggcgt	gtttgtcgtc	atcgccgcc	ccttggttgc	cggccggctg	840
tcgcatcaaa	aataa					855

<210> 244

<211> 284

<212> PRT

<213> Neisseria meningitidis

<400> 244

Met Phe Tyr Gln Ile Leu Ala Leu Ile Ile Trp Ser Ser Ser Phe Ile  
1 5 10 15

Ala Ala Lys Tyr Val Tyr Gly Gly Ile Asp Pro Ala Leu Met Val Gly  
20 25 30

Val Arg Leu Leu Ile Ala Ala Leu Pro Ala Leu Pro Ala Cys Arg Arg  
35 40 45

His Val Gly Lys Ile Pro Arg Glu Glu Trp Lys Pro Leu Leu Ile Val  
50 55 60

Ser Phe Val Asn Tyr Val Leu Thr Leu Leu Leu Gln Phe Val Gly Leu

65	70	75	80
Lys Tyr Thr Ser Ala Ala Ser Ala Ser Val Ile Val Gly Leu Glu Pro	85	90	95
Leu Leu Met Val Phe Val Gly His Phe Phe Phe Asn Asp Lys Ala Arg	100	105	110
Ala Tyr His Trp Ile Cys Gly Ala Ala Ala Phe Ala Gly Val Ala Leu	115	120	125
Leu Met Ala Gly Gly Ala Glu Glu Gly Gly Glu Val Gly Trp Phe Gly	130	135	140
Cys Leu Leu Val Leu Leu Ala Gly Ala Gly Phe Cys Ala Ala Met Arg	145	150	155
Pro Thr Gln Arg Leu Ile Ala Arg Ile Gly Ala Pro Ala Phe Thr Ser	165	170	175
Val Ser Ile Ala Ala Ala Ser Leu Met Cys Leu Pro Phe Ser Leu Ala	180	185	190
Leu Ala Gln Ser Tyr Thr Val Asp Trp Ser Val Gly Met Val Leu Ser	195	200	205
Leu Leu Tyr Leu Gly Leu Gly Cys Gly Trp Tyr Ala Tyr Trp Leu Trp	210	215	220
Asn Lys Gly Met Ser Arg Val Pro Ala Asn Val Ser Gly Leu Leu Ile	225	230	235
Ser Leu Glu Pro Val Val Gly Val Leu Leu Ala Val Leu Ile Leu Gly	245	250	255
Glu His Leu Ser Pro Val Ser Ala Leu Gly Val Phe Val Val Ile Ala	260	265	270
Ala Thr Leu Val Ala Gly Arg Leu Ser His Gln Lys	275	280	

<210> 245  
 <211> 855  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 245	
atgttttacc aaatccttgc cctgattatc tggagcagct cgttttattgc cgccaaatat	60
gtctatggcg gcatcgatcc cgcattgatg gtcggcgtgc gcctgctgat tgctgcgctg	120
cctgcactgc ccgcctgccg ccgtcatgtc ggcaagattc cgcgtgagga atggaagccg	180
ttgctgattg tgctcgttcgt caactatgtg ctgaccctgc tacttcagtt tgcggggttg	240
aaatacactt ccgcccgcag cgcacgcgtc attgtcggac tcgagccact gctgatgggtg	300
tttgtcggac actttttctt caacgacaaa gcgcgtgcct accactggat atgcggcgcg	360
gcggcatttg ccggtgtcgc gctgctgatg gcgggcggtg cggaagaggg cggcgaagtc	420
ggctgggttcg gctgcctgct ggtgttggtg gcgggcgcgg gcttttgtgc cgctatgcgt	480
ccgacgcaaa ggctgattgc acgcatcggc gcaccggcat tcacatctgt ttccattgcc	540

gccgcatcgt	tgatgtgcct	gccgttttcg	cttgcttttg	cgcaaagtta	taccgtggac	600
tgagacgtcg	gaatggatt	gtcgtgctg	tatttgggcg	tgggggtgcag	ctggtacgcc	660
tattggctgt	ggaacaaggg	gatgagccgt	gttcctgcc	acgtttcggg	actgttgatt	720
tcgctcgaac	ccgtcgtcgg	cgtgctgctg	gcggttttga	ttttgggcga	acacctgtcg	780
cccgtgtccg	tcttgggcgt	gtttgtcgtc	atcgccgcc	ccttggttgc	cggccggctg	840
tcgcatcaaa	aataa					855

<210> 246  
 <211> 284  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 246

Met	Phe	Tyr	Gln	Ile	Leu	Ala	Leu	Ile	Ile	Trp	Ser	Ser	Ser	Phe	Ile	1	5	10	15
Ala	Ala	Lys	Tyr	Val	Tyr	Gly	Gly	Ile	Asp	Pro	Ala	Leu	Met	Val	Gly	20	25	30	
Val	Arg	Leu	Leu	Ile	Ala	Ala	Leu	Pro	Ala	Leu	Pro	Ala	Cys	Arg	Arg	35	40	45	
His	Val	Gly	Lys	Ile	Pro	Arg	Glu	Glu	Trp	Lys	Pro	Leu	Leu	Ile	Val	50	55	60	
Ser	Phe	Val	Asn	Tyr	Val	Leu	Thr	Leu	Leu	Leu	Gln	Phe	Val	Gly	Leu	65	70	75	80
Lys	Tyr	Thr	Ser	Ala	Ala	Ser	Ala	Ser	Val	Ile	Val	Gly	Leu	Glu	Pro	85	90	95	
Leu	Leu	Met	Val	Phe	Val	Gly	His	Phe	Phe	Phe	Asn	Asp	Lys	Ala	Arg	100	105	110	
Ala	Tyr	His	Trp	Ile	Cys	Gly	Ala	Ala	Ala	Phe	Ala	Gly	Val	Ala	Leu	115	120	125	
Leu	Met	Ala	Gly	Gly	Ala	Glu	Glu	Gly	Gly	Glu	Val	Gly	Trp	Phe	Gly	130	135	140	
Cys	Leu	Leu	Val	Leu	Leu	Ala	Gly	Ala	Gly	Phe	Cys	Ala	Ala	Met	Arg	145	150	155	160
Pro	Thr	Gln	Arg	Leu	Ile	Ala	Arg	Ile	Gly	Ala	Pro	Ala	Phe	Thr	Ser	165	170	175	
Val	Ser	Ile	Ala	Ala	Ala	Ser	Leu	Met	Cys	Leu	Pro	Phe	Ser	Leu	Ala	180	185	190	
Leu	Ala	Gln	Ser	Tyr	Thr	Val	Asp	Trp	Ser	Val	Gly	Met	Val	Leu	Ser	195	200	205	
Leu	Leu	Tyr	Leu	Gly	Val	Gly	Cys	Ser	Trp	Tyr	Ala	Tyr	Trp	Leu	Trp	210	215	220	
Asn	Lys	Gly	Met	Ser	Arg	Val	Pro	Ala	Asn	Val	Ser	Gly	Leu	Leu	Ile				

225                      230                      235                      240

Ser Leu Glu Pro Val Val Gly Val Leu Leu Ala Val Leu Ile Leu Gly

                        245                      250                      255

Leu Leu Met Val Phe Val Gly His Phe Phe Phe Asn Asp Lys Ala Arg  
 100 105 110  
 Ala Tyr His Trp Ile Cys Gly Ala Ala Ala Phe Ala Gly Val Ala Leu  
 115 120 125  
 Leu Met Ala Gly Gly Ala Glu Glu Gly Gly Glu Val Gly Trp Phe Gly  
 130 135 140  
 Cys Leu Leu Val Leu Leu Ala Gly Ala Gly Phe Cys Ala Ala Met Arg  
 145 150 155 160  
 Pro Thr Gln Arg Leu Ile Ala Arg Ile Gly Ala Pro Ala Phe Thr Ser  
 165 170 175  
 Val Ser Ile Ala Ala Ala Ser Leu Met Cys Leu Pro Phe Ser Leu Ala  
 180 185 190  
 Leu Ala Gln Ser Tyr Thr Val Asp Trp Ser Val Gly Met Val Leu Ser  
 195 200 205  
 Leu Leu Tyr Leu Gly Leu Gly Cys Gly Trp Tyr Ala Tyr Trp Leu Trp  
 210 215 220  
 Asn Lys Gly Met Ser Arg Val Pro Ala Asn Ala Ser Gly Leu Leu Ile  
 225 230 235 240  
 Ser Leu Glu Pro Val Val Gly Val Leu Leu Ala Val Leu Ile Leu Gly  
 245 250 255  
 Glu His Leu Ser Pro Val Ser Ala Leu Gly Val Phe Val Val Ile Ala  
 260 265 270  
 Ala Thr Phe Ala Ala Gly Arg Leu Ser Arg Arg Asp Ala Gln Asn Gly  
 275 280 285  
 Asn Ala Val  
 290

<210> 249  
 <211> 1182  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 249  
 atgcgcggtt ttctaccgat cgcagccata tgcgcmgwms tcctgkkgta sggactgacg 60  
 gcggcaaccg gcagcaccag ttcgctggcg gattatttct ggtggattgt tgcgttcagc 120  
 gcaatgctgc tgctggtggt gtccgccggt ttggcacggt atgtcatatt gctgttgaaa 180  
 gacagggcgcg acggcggtatt cggttcgcta srtygcaaaa gsgcctgkks tgggatgttt 240  
 acgctgggtt cgcgactgcc cggcgtgttt ctgttcggct ttcccgcaac gtcatcaac 300  
 ggcacgatta attcgtgggt cggcaacgat acccagcagg cgcttgaacg cagcctcaat 360  
 ttgagcaagt ccgcattgaa tttggcgcca gacaacgcc tcggcaacgc cgtccccgtg 420  
 cagatagacc tcatcggcgc ggcttcctg cccggggata tgggcagggt gctggaacat 480  
 tacgcggcca gcggttttgc ccagcttgcc ctgtacaayk scgcaagcgg caaaatcgaa 540  
 aaaagcatca acccgcacaa gctcgatcag ccgtttccag gtaaggcgcg ttgggaaaaa 600  
 atccaacggg cgggttcggt cagggtttg gaaagcatag gcggcgtatt gtacgcgcag 660

ggctggctgt	cggcgggtac	gcacwacggg	cgcgattacg	ccttggtttt	ccgtcagccg	720
gttcccaaag	gcgtggcaga	ggatgccgty	ttaatcgaaa	aggcaagggc	gaaatatgct	780
gagttgagtt	acagcaaaaa	aggtttgag	acctttttcc	tggcaaccct	gctgattgcc	840
tcgctgctgt	cgatttttct	tgcactggtc	atggcactgt	atttcgcccg	ccgtttcgtc	900
gaaccgcgtcc	tatcgcttgc	cgagggggcg	aaggcgggtg	cgcaaggcga	tttcagccag	960
acgcgccccg	tgttgcgcaa	cgacgagttc	ggacgcttga	ccargttgtt	caaccacatg	1020
accgagcagc	tttccatcgc	caaagatgca	gacgagcgca	accgccggcg	cgaggaagcc	1080
gccaggcatt	atcttgaatg	cgtgttggag	gggctgacca	cgggcggtgt	ggtgtttgac	1140
gaacaaggct	gtctgaaaaac	cttcaacaaa	gcggcgggta	cc		1182

<210> 250  
 <211> 394  
 <212> PRT  
 <213> *Neisseria meningitidis*

<220>  
 <221> misc\_feature  
 <222> (13)..(14)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (16)..(17)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (70)..(71)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (74)..(74)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (76)..(78)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (85)..(85)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (174)..(174)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (229)..(229)  
 <223> Xaa= any amino acid

<220>

<221> misc\_feature  
<222> (335)..(335)  
<223> Xaa= any amino acid

<400> 250

Met	Arg	Arg	Phe	Leu	Pro	Ile	Ala	Ala	Ile	Cys	Ala	Xaa	Xaa	Leu	Xaa				
1				5					10					15					
Xaa	Gly	Leu	Thr	Ala	Ala	Thr	Gly	Ser	Thr	Ser	Ser	Leu	Ala	Asp	Tyr				
			20					25					30						
Phe	Trp	Trp	Ile	Val	Ala	Phe	Ser	Ala	Met	Leu	Leu	Leu	Val	Leu	Ser				
	35						40					45							
Ala	Val	Leu	Ala	Arg	Tyr	Val	Ile	Leu	Leu	Leu	Lys	Asp	Arg	Arg	Asp				
	50					55					60								
Gly	Val	Phe	Gly	Ser	Xaa	Xaa	Ala	Lys	Xaa	Pro	Xaa	Xaa	Xaa	Met	Phe				
65				70					75						80				
Thr	Leu	Val	Ala	Xaa	Leu	Pro	Gly	Val	Phe	Leu	Phe	Gly	Phe	Pro	Ala				
			85					90						95					
Gln	Phe	Ile	Asn	Gly	Thr	Ile	Asn	Ser	Trp	Phe	Gly	Asn	Asp	Thr	His				
		100					105						110						
Glu	Ala	Leu	Glu	Arg	Ser	Leu	Asn	Leu	Ser	Lys	Ser	Ala	Leu	Asn	Leu				
	115						120					125							
Ala	Ala	Asp	Asn	Ala	Leu	Gly	Asn	Ala	Val	Pro	Val	Gln	Ile	Asp	Leu				
	130					135					140								
Ile	Gly	Ala	Ala	Ser	Leu	Pro	Gly	Asp	Met	Gly	Arg	Val	Leu	Glu	His				
145				150					155					160					
Tyr	Ala	Gly	Ser	Gly	Phe	Ala	Gln	Leu	Ala	Leu	Tyr	Asn	Xaa	Ala	Ser				
			165					170						175					
Gly	Lys	Ile	Glu	Lys	Ser	Ile	Asn	Pro	His	Lys	Leu	Asp	Gln	Pro	Phe				
		180					185						190						
Pro	Gly	Lys	Ala	Arg	Trp	Glu	Lys	Ile	Gln	Arg	Ala	Gly	Ser	Val	Arg				
	195						200					205							
Asp	Leu	Glu	Ser	Ile	Gly	Gly	Val	Leu	Tyr	Ala	Gln	Gly	Trp	Leu	Ser				
	210					215					220								
Ala	Gly	Thr	His	Xaa	Gly	Arg	Asp	Tyr	Ala	Leu	Phe	Phe	Arg	Gln	Pro				
225					230					235					240				
Val	Pro	Lys	Gly	Val	Ala	Glu	Asp	Ala	Val	Leu	Ile	Glu	Lys	Ala	Arg				
			245						250					255					
Ala	Lys	Tyr	Ala	Glu	Leu	Ser	Tyr	Ser	Lys	Lys	Gly	Leu	Gln	Thr	Phe				
		260					265						270						

Phe Leu Ala Thr Leu Leu Ile Ala Ser Leu Leu Ser Ile Phe Leu Ala  
275 280 285

Leu Val Met Ala Leu Tyr Phe Ala Arg Arg Phe Val Glu Pro Val Leu  
290 295 300

Ser Leu Ala Glu Gly Ala Lys Ala Val Ala Gln Gly Asp Phe Ser Gln  
305 310 315 320

Thr Arg Pro Val Leu Arg Asn Asp Glu Phe Gly Arg Leu Thr Xaa Leu  
325 330 335

Phe Asn His Met Thr Glu Gln Leu Ser Ile Ala Lys Asp Ala Asp Glu  
340 345 350

Arg Asn Arg Arg Arg Glu Glu Ala Ala Arg His Tyr Leu Glu Cys Val  
355 360 365

Leu Glu Gly Leu Thr Thr Gly Val Val Val Phe Asp Glu Gln Gly Cys  
370 375 380

Leu Lys Thr Phe Asn Lys Ala Ala Gly Thr  
385 390

<210> 251

<211> 2121

<212> DNA

<213> Neisseria meningitidis

<400> 251

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gcggcaaccg	gcagcaccag	ttcgctggcg	gattatttct	ggtggattgt	tgcgttcagc	120
gcaatgctgc	tgctgggtgt	gtccgccggt	ttggcacgtt	atgtcatatt	gctgttgaaa	180
gacaggcgcg	acggcggtatt	cggttcgcag	attgccaaac	gcctttctgg	gatgtttacg	240
ctggttgccg	tactgcccgg	cgtgtttctg	ttcggcggtt	ccgcacagtt	catcaacggc	300
acgattaatt	cgtgggttcgg	caacgatacc	cacgaggcgc	ttgaacgcag	cctcaatttg	360
agcaagtccg	cattgaattt	ggcggcagac	aacgccctcg	gcaacgccgt	ccccgtgcag	420
atagacctca	tcggcgccgg	ttccctgccc	ggggatatgg	gcagggtgct	ggaacattac	480
gccggcagcg	gttttgccca	gcttgccctg	tacaatgccg	caagcggcaa	aatcgaaaaa	540
agcatcaacc	cgcacaagct	cgatcagccg	tttccaggta	aggcgcgttg	ggaaaaaatc	600
caacggggcgg	gttcgggtcag	ggatttggaa	agcataggcg	gcgtattgta	cgcgcagggc	660
tggctgtcgg	cgggtacgca	caacggggcg	gattacgcct	tgtttttccg	tcagccgggt	720
cccaaaggcg	tggcagagga	tgccgtctta	atcgaaaagg	caagggcgaa	atatgctgag	780
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ctgctgtcga	tttttcttgc	actggtcatt	gcactgtatt	tcgcccgcgg	tttcgtcgaa	900
cccgtcctat	cgcttgccga	gggggcgaag	gcggtggcgc	aaggcgattt	cagccagacg	960
cgccccgtgt	tgcgcaacga	cgagttcgga	cgcttgacca	agttgttcaa	ccacatgacc	1020
gagcagcttt	ccatcgccaa	agaagcagac	gagcgcaacc	gccggcgcgga	ggaagccgcc	1080
aggcattatc	ttgaatgcgt	gttggagggg	ctgaccacgg	gcgtgggtgt	gtttgacgaa	1140
caaggctgtc	tgaaaacctt	caacaaagcg	gcggaacaga	ttttggggat	gccgcttacc	1200
cccctgtggg	gcagcagccg	gcacgggttg	cacggcggtt	cggcgagcga	gtccctgctt	1260
gccgaagtgt	ttgccgcat	cggcgcgccg	gcaggtacgg	acaaaccggt	ccatgtgaaa	1320
tatgccgcgc	cggacgatgc	caaaatcctg	ctgggcaagg	caaccgtcct	gcccgaagac	1380
aacggcaacg	gcgtggtaat	ggtgattgac	gacatcacgg	ttttgatata	cgcgcataaa	1440
gaagccgcgt	ggggcgaaat	ggcgaagcgg	ctggcacacg	aaatccgcaa	tccgctcacg	1500
cccatccagc	tttccgccga	acggctggcg	tggaaattgg	gcgggaagct	ggatgagcag	1560



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 Gly Val Phe Gly Ser Gln Ile Ala Lys Arg Leu Ser Gly Met Phe Thr  
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 130 135 140  
 Gly Ala Ala Ser Leu Pro Gly Asp Met Gly Arg Val Leu Glu His Tyr  
 145 150 155 160  
 Ala Gly Ser Gly Phe Ala Gln Leu Ala Leu Tyr Asn Ala Ala Ser Gly  
 165 170 175  
 Lys Ile Glu Lys Ser Ile Asn Pro His Lys Leu Asp Gln Pro Phe Pro  
 180 185 190  
 Gly Lys Ala Arg Trp Glu Lys Ile Gln Arg Ala Gly Ser Val Arg Asp  
 195 200 205

Leu Glu Ser Ile Gly Gly Val Leu Tyr Ala Gln Gly Trp Leu Ser Ala  
 210 215 220  
 Gly Thr His Asn Gly Arg Asp Tyr Ala Leu Phe Phe Arg Gln Pro Val  
 225 230 235 240  
 Pro Lys Gly Val Ala Glu Asp Ala Val Leu Ile Glu Lys Ala Arg Ala  
 245 250 255  
 Lys Tyr Ala Glu Leu Ser Tyr Ser Lys Lys Gly Leu Gln Thr Phe Phe  
 260 265 270  
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 Arg Pro Val Leu Arg Asn Asp Glu Phe Gly Arg Leu Thr Lys Leu Phe  
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 Asn Arg Arg Arg Glu Glu Ala Ala Arg His Tyr Leu Glu Cys Val Leu  
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 Lys Thr Phe Asn Lys Ala Ala Glu Gln Ile Leu Gly Met Pro Leu Thr  
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 405 410 415  
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 Val Val Met Val Ile Asp Asp Ile Thr Val Leu Ile His Ala Gln Lys  
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Xaa Xaa Xaa Xaa Leu Ser Tyr Ser Lys Lys Gly Leu Gln Thr Phe Phe 260 265 270		
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Pro Leu Trp Gly Ser Ser Arg His Gly Trp His Gly Val Ser Ala Gln 405 410 415		
Gln Ser Leu Leu Ala Glu Val Phe Ala Ala Ile Gly Ala Ala Ala Gly 420 425 430		
Thr Asp Lys Pro Val His Val Lys Tyr Ala Ala Pro Asp Asp Ala Lys 435 440 445		
Ile Leu Leu Gly Lys Ala Thr Val Leu Pro Glu Asp Asn Xaa Asn Gly 450 455 460		
Val Val Met Val Ile Asp Asp Ile Thr Val Leu Ile His Ala Gln Lys 465 470 475 480		
Glu Ala Ala Trp Gly Glu Val Ala Lys Arg Leu Ala His Glu Ile Arg 485 490 495		



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Arg Pro Val Leu Arg Asn Asp Glu Phe Gly Arg Leu Thr Lys Leu Phe  
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Asn His Met Thr Glu Gln Leu Ser Ile Ala Lys Glu Ala Asp Glu Arg  
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<213> Neisseria gonorrhoeae

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gacgcgcaaa	tcctgacgcg	ttcgaccgac	accatcatca	aacaggtggc	ggcggttaaaa	1620
gaaatggtcg	aggcattccg	caattacgcg	cgcgcccctt	cgctcaaact	ggaaaaatcag	1680
gattttgaacg	ccttaatcgg	cgatgttttg	gccctgtaag	aagccggccc	gtgccgggttt	1740
gaggcggaac	ttgccggcga	accgctgatg	atggcgggcg	atacgaccgc	catgcggcg	1800
gtgctgcaca	atattttcaa	aaatgccgcc	gaagcgggcg	aagaagccga	tatgcccga	1860
gtcagggtaa	aatcggaac	ggggcaggac	ggacggattg	tcctgacggt	ttgcgacaac	1920
ggcaagggat	tcggcaagga	aatgctgcac	aatgctttcg	agccgtatgt	gacggataag	1980
ccggcgggaa	cgggactggg	tctgcctgta	gtgaaaaaaaa	tcattggaga	acacggcggc	2040
cgcacagcc	tgagcaatca	ggatgcgggt	ggggcggtgtg	tcagaatcat	cttgccaaaa	2100
acggtagaaa	cttatgcgta	g				2121

<210> 258  
 <211> 706  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 258  
 Met Arg Arg Phe Leu Pro Ile Ala Ala Ile Cys Ala Val Val Leu Leu  
 1 5 10 15  
 Tyr Gly Leu Thr Ala Ala Thr Gly Ser Thr Ser Ser Leu Ala Asp Tyr  
 20 25 30  
 Phe Trp Trp Ile Val Ser Phe Ser Ala Met Leu Leu Leu Val Leu Ser  
 35 40 45  
 Ala Val Leu Ala Arg Tyr Val Ile Leu Leu Leu Lys Asp Arg Arg Asn  
 50 55 60  
 Gly Val Phe Gly Ser Gln Ile Ala Lys Arg Leu Ser Gly Met Phe Thr  
 65 70 75 80  
 Leu Val Ala Val Leu Pro Gly Leu Phe Leu Phe Gly Ile Ser Ala Gln  
 85 90 95  
 Phe Ile Asn Gly Thr Ile Asn Ser Trp Phe Gly Asn Asp Thr His Glu  
 100 105 110  
 Ala Leu Glu Arg Ser Leu Asn Leu Ser Lys Ser Ala Leu Asp Leu Ala  
 115 120 125  
 Ala Asp Asn Ala Val Ser Asn Ala Val Pro Val Gln Ile Asp Leu Ile  
 130 135 140  
 Gly Thr Ala Ser Leu Ser Gly Asn Met Gly Ser Val Leu Glu His Tyr  
 145 150 155 160  
 Ala Gly Ser Gly Phe Ala Gln Leu Ala Leu Tyr Asn Ala Ala Ser Gly  
 165 170 175  
 Lys Ile Glu Lys Ser Ile Asn Pro His Gln Phe Asp Gln Pro Leu Pro  
 180 185 190  
 Asp Lys Glu His Trp Glu Gln Ile Gln Gln Thr Gly Ser Val Arg Ser  
 195 200 205

Leu	Glu	Ser	Ile	Gly	Gly	Val	Leu	Tyr	Ala	Gln	Gly	Trp	Leu	Ser	Ala	210	215	220
Gly	Thr	His	Asn	Gly	Arg	Asp	Tyr	Ala	Leu	Phe	Phe	Arg	Gln	Pro	Ile	225	230	235 240
Pro	Glu	Asn	Val	Ala	Gln	Asp	Ala	Val	Leu	Ile	Glu	Lys	Ala	Arg	Ala	245	250	255
Lys	Tyr	Ala	Glu	Leu	Ser	Tyr	Ser	Lys	Lys	Gly	Leu	Gln	Thr	Phe	Phe	260	265	270
Leu	Val	Thr	Leu	Leu	Ile	Ala	Ser	Leu	Leu	Ser	Ile	Phe	Leu	Ala	Leu	275	280	285
Val	Met	Ala	Leu	Tyr	Phe	Ala	Arg	Arg	Phe	Val	Glu	Pro	Ile	Leu	Ser	290	295	300
Leu	Ala	Glu	Gly	Ala	Lys	Ala	Val	Ala	Gln	Gly	Asp	Phe	Ser	Gln	Thr	305	310	315 320
Arg	Pro	Val	Leu	Arg	Asn	Asp	Glu	Phe	Gly	Arg	Leu	Thr	Lys	Leu	Phe	325	330	335
Asn	His	Met	Thr	Glu	Gln	Leu	Ser	Ile	Ala	Lys	Glu	Ala	Asp	Glu	Arg	340	345	350
Asn	Arg	Arg	Arg	Glu	Glu	Ala	Ala	Arg	His	Tyr	Leu	Glu	Cys	Val	Leu	355	360	365
Asp	Gly	Leu	Thr	Thr	Gly	Val	Val	Val	Phe	Asp	Glu	Lys	Gly	Arg	Leu	370	375	380
Lys	Thr	Phe	Asn	Lys	Ala	Ala	Glu	Gln	Ile	Leu	Gly	Met	Pro	Leu	Ala	385	390	395 400
Pro	Leu	Trp	Gly	Ser	Ser	Arg	His	Gly	Trp	His	Gly	Val	Ser	Ala	Gln	405	410	415
Gln	Ser	Leu	Leu	Ala	Glu	Val	Phe	Ala	Ala	Ile	Gly	Ala	Ala	Ala	Gly	420	425	430
Thr	Asp	Lys	Pro	Val	Gln	Val	Glu	Tyr	Ala	Ala	Pro	Asp	Asp	Ala	Lys	435	440	445
Ile	Leu	Leu	Gly	Lys	Ala	Thr	Val	Leu	Pro	Glu	Asp	Asn	Gly	Asn	Gly	450	455	460
Val	Val	Met	Val	Ile	Asp	Asp	Ile	Thr	Val	Leu	Ile	Arg	Ala	Gln	Lys	465	470	475 480
Glu	Ala	Ala	Trp	Gly	Glu	Val	Ala	Lys	Arg	Leu	Ala	His	Glu	Ile	Arg	485	490	495
Asn	Pro	Leu	Thr	Pro	Ile	Gln	Leu	Ser	Ala	Glu	Arg	Leu	Ala	Trp	Lys	500	505	510

Leu Gly Gly Lys Leu Asp Asp Gln Asp Ala Gln Ile Leu Thr Arg Ser  
 515 520 525  
 Thr Asp Thr Ile Ile Lys Gln Val Ala Ala Leu Lys Glu Met Val Glu  
 530 535 540  
 Ala Phe Arg Asn Tyr Ala Arg Ala Pro Ser Leu Lys Leu Glu Asn Gln  
 545 550 555 560  
 Asp Leu Asn Ala Leu Ile Gly Asp Val Leu Ala Leu Tyr Glu Ala Gly  
 565 570 575  
 Pro Cys Arg Phe Glu Ala Glu Leu Ala Gly Glu Pro Leu Met Met Ala  
 580 585 590  
 Ala Asp Thr Thr Ala Met Arg Gln Val Leu His Asn Ile Phe Lys Asn  
 595 600 605  
 Ala Ala Glu Ala Ala Glu Glu Ala Asp Met Pro Glu Val Arg Val Lys  
 610 615 620  
 Ser Glu Thr Gly Gln Asp Gly Arg Ile Val Leu Thr Val Cys Asp Asn  
 625 630 635 640  
 Gly Lys Gly Phe Gly Lys Glu Met Leu His Asn Ala Phe Glu Pro Tyr  
 645 650 655  
 Val Thr Asp Lys Pro Ala Gly Thr Gly Leu Gly Leu Pro Val Val Lys  
 660 665 670  
 Lys Ile Ile Gly Glu His Gly Gly Arg Ile Ser Leu Ser Asn Gln Asp  
 675 680 685  
 Ala Gly Gly Ala Cys Val Arg Ile Ile Leu Pro Lys Thr Val Glu Thr  
 690 695 700

Tyr Ala  
 705

<210> 259  
 <211> 465  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 259  
 atgtacgcat ttaccgccgc acagcaacag aaggcactct tccggctggt gctttttcat 60  
 atcctcatca tcgccgccag caactatctg gtgcagttcc ctttccaaat tttcggcatc 120  
 cacaccactt ggggcgcatt ttcctttccc ttcattctcc ttgccaccga cctgaccgtc 180  
 cgcattttcg gttctcactt ggcacggcgg attatctttt ggggtgatgtt ccccgccctt 240  
 ttgcttttct acgtcttttc cgtttttgtt cacaacggca gttggacagg cttgggcgcg 300  
 ctgtccgaat tcaacacctt tgtcggacgc atcgccctag ccagctttgc cgcctacgcg 360  
 atcggacaaa tccttgatat ttttgtattc aacaaattac gccgtctgaa agcgtggtgg 420  
 attgcaccga acgcatcaac cgtcatcggg cagcgttgg atacg 465

<210> 260  
 <211> 155

<212> PRT

<213> Neisseria meningitidis

<400> 260

Met Tyr Ala Phe Thr Ala Ala Gln Gln Gln Lys Ala Leu Phe Arg Leu  
1 5 10 15  
Val Leu Phe His Ile Leu Ile Ile Ala Ala Ser Asn Tyr Leu Val Gln  
20 25 30  
Phe Pro Phe Gln Ile Phe Gly Ile His Thr Thr Trp Gly Ala Phe Ser  
35 40 45  
Phe Pro Phe Ile Phe Leu Ala Thr Asp Leu Thr Val Arg Ile Phe Gly  
50 55 60  
Ser His Leu Ala Arg Arg Ile Ile Phe Trp Val Met Phe Pro Ala Leu  
65 70 75 80  
Leu Leu Ser Tyr Val Phe Ser Val Leu Phe His Asn Gly Ser Trp Thr  
85 90 95  
Gly Leu Gly Ala Leu Ser Glu Phe Asn Thr Phe Val Gly Arg Ile Ala  
100 105 110  
Leu Ala Ser Phe Ala Ala Tyr Ala Ile Gly Gln Ile Leu Asp Ile Phe  
115 120 125  
Val Phe Asn Lys Leu Arg Arg Leu Lys Ala Trp Trp Ile Ala Pro Asn  
130 135 140  
Ala Ser Thr Val Ile Gly His Ala Leu Asp Thr  
145 150 155

<210> 261

<211> 687

<212> DNA

<213> Neisseria meningitidis

<400> 261

atgtacgcat	ttaccgccgc	acagcaacag	aaggcactct	tccggctggg	gctttttcat	60
atcctcatca	tcgccgccag	caactatctg	gtgcagttcc	ctttccaaat	tttcggcatc	120
cacaccactt	ggggcgcat	ttcctttccc	ttcatcttcc	ttgccaccga	cctgaccgtc	180
cgcattttcg	gttctcactt	ggcacggcgg	attatctttt	gggtgatggt	ccccgccctt	240
ttgctttcct	acgtcttttc	cgttttgttc	cacaacggca	gttggacagg	cttggggcgcg	300
ctgtccgaat	tcaacacctt	tgtcggacgc	atcgcccttag	ccagctttgc	cgcctacgcg	360
atcggacaaa	tccttgatat	ttttgtattc	aacaaattac	gccgtctgaa	agcgtgggtgg	420
attgcaccga	ccgcatcaac	cgtcacgcgc	aacgccttgg	atacgctggg	atTTTTcgcc	480
gttgccttct	acgcaagcag	cgatggattt	atggcgggcaa	actggcaggg	catcgctttt	540
gtcgattacc	tggtcaaact	taccgtctgc	accctcttct	tcctgcccgc	ctacggcgtg	600
atactgaatc	tgctgacgaa	aaaactgaca	accctgcaaa	ccaaacaggc	gcaagaccgc	660
cccgcgccct	cgctgcaaaa	tccgtaa				687

<210> 262

<211> 228

<212> PRT

<213> Neisseria meningitidis

<400> 262

Met Tyr Ala Phe Thr Ala Ala Gln Gln Gln Lys Ala Leu Phe Arg Leu  
1 5 10 15

Val Leu Phe His Ile Leu Ile Ile Ala Ala Ser Asn Tyr Leu Val Gln  
20 25 30

Phe Pro Phe Gln Ile Phe Gly Ile His Thr Thr Trp Gly Ala Phe Ser  
35 40 45

Phe Pro Phe Ile Phe Leu Ala Thr Asp Leu Thr Val Arg Ile Phe Gly  
50 55 60

Ser His Leu Ala Arg Arg Ile Ile Phe Trp Val Met Phe Pro Ala Leu  
65 70 75 80

Leu Leu Ser Tyr Val Phe Ser Val Leu Phe His Asn Gly Ser Trp Thr  
85 90 95

Gly Leu Gly Ala Leu Ser Glu Phe Asn Thr Phe Val Gly Arg Ile Ala  
100 105 110

Leu Ala Ser Phe Ala Ala Tyr Ala Ile Gly Gln Ile Leu Asp Ile Phe  
115 120 125

Val Phe Asn Lys Leu Arg Arg Leu Lys Ala Trp Trp Ile Ala Pro Thr  
130 135 140

Ala Ser Thr Val Ile Gly Asn Ala Leu Asp Thr Leu Val Phe Phe Ala  
145 150 155 160

Val Ala Phe Tyr Ala Ser Ser Asp Gly Phe Met Ala Ala Asn Trp Gln  
165 170 175

Gly Ile Ala Phe Val Asp Tyr Leu Phe Lys Leu Thr Val Cys Thr Leu  
180 185 190

Phe Phe Leu Pro Ala Tyr Gly Val Ile Leu Asn Leu Leu Thr Lys Lys  
195 200 205

Leu Thr Thr Leu Gln Thr Lys Gln Ala Gln Asp Arg Pro Ala Pro Ser  
210 215 220

Leu Gln Asn Pro  
225

<210> 263

<211> 687

<212> DNA

<213> Neisseria meningitidis

<400> 263

atgtacgcat ttaccgccgc acagcaacag aaggcactct tctggctggt gctttttcat 60  
atcctcatca tcgccgccag caactatctg gtgcagttcc ccttccaaat ttccggcatc 120



cacaccactt	ggggcgcggt	ttcctttccc	ttcatcttcc	tcgccaccga	cctgaccgtc	180
cgcattttcg	gttcgcactt	ggcacggcgg	attatctttt	gggtcatggt	ccccgccctt	240
ttgcttttct	acgtcttttc	cgttttgttc	cacaacggca	gttggacggg	cttggggcgcg	300
ctgtccgaat	tcaacacctt	tgtcggacgc	atcgcgctgg	caagttttgc	cgcctacgcg	360
ctcggacaaa	tccttgatat	ttttgtgttc	aacaaattac	gccgtctgaa	agcgtggtgg	420
gttgccccga	ctgcatcaac	cgtcacgcgc	aacgccttag	atacgttggg	atttttcgcc	480
gttgcccttct	acgcaagcag	cgatggattt	atggcgggcaa	actggcaggg	catcgctttt	540
gtcgattacc	tgttcaaaact	caccgtctgc	ggtctgtttt	tcctgcccgc	ctacggcggtg	600
attctgaatc	tgttgacgaa	aaaactgacg	accctgcaaa	ccaaacaggg	gcaagaccgc	660
cccgcgccct	cgctgcaaaa	tccgtaa				687

<210> 264  
 <211> 228  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 264  
 Met Tyr Ala Phe Thr Ala Ala Gln Gln Gln Lys Ala Leu Phe Trp Leu  
 1 5 10 15  
 Val Leu Phe His Ile Leu Ile Ile Ala Ala Ser Asn Tyr Leu Val Gln  
 20 25 30  
 Phe Pro Phe Gln Ile Ser Gly Ile His Thr Thr Trp Gly Ala Phe Ser  
 35 40 45  
 Phe Pro Phe Ile Phe Leu Ala Thr Asp Leu Thr Val Arg Ile Phe Gly  
 50 55 60  
 Ser His Leu Ala Arg Arg Ile Ile Phe Trp Val Met Phe Pro Ala Leu  
 65 70 75 80  
 Leu Leu Ser Tyr Val Phe Ser Val Leu Phe His Asn Gly Ser Trp Thr  
 85 90 95  
 Gly Leu Gly Ala Leu Ser Glu Phe Asn Thr Phe Val Gly Arg Ile Ala  
 100 105 110  
 Leu Ala Ser Phe Ala Ala Tyr Ala Leu Gly Gln Ile Leu Asp Ile Phe  
 115 120 125  
 Val Phe Asn Lys Leu Arg Arg Leu Lys Ala Trp Trp Val Ala Pro Thr  
 130 135 140  
 Ala Ser Thr Val Ile Gly Asn Ala Leu Asp Thr Leu Val Phe Phe Ala  
 145 150 155 160  
 Val Ala Phe Tyr Ala Ser Ser Asp Gly Phe Met Ala Ala Asn Trp Gln  
 165 170 175  
 Gly Ile Ala Phe Val Asp Tyr Leu Phe Lys Leu Thr Val Cys Gly Leu  
 180 185 190  
 Phe Phe Leu Pro Ala Tyr Gly Val Ile Leu Asn Leu Leu Thr Lys Lys  
 195 200 205

Leu Thr Thr Leu Gln Thr Lys Gln Ala Gln Asp Arg Pro Ala Pro Ser  
 210 215 220

Leu Gln Asn Pro  
 225

<210> 265  
 <211> 687  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 265  
 atgtacgcat tgaccgccgc acagcaacag aaggcactct tccggctggt gcttttccat 60  
 atcctcatca tcgccgccag caactatctg gtgcagttcc ccttccggat ttccggcatc 120  
 cacaccactt ggggcgcggt ttcctttccc ttcactctcc tcgccaccga cctgaccgtc 180  
 cgcattttcg gttcgcactt ggcgcggcgg attatctttt gggatgatgt ccccgccctt 240  
 ttgctttcat acgtcttttc cgttttggtc cacaacggca gttggacggg cttgggcgcg 300  
 ctgtcccaat tcaacacctt tgcgcgacgc atcgcgctgg caagttttgc cgcctacgcg 360  
 ctccggacaaa tccttgatat ttctgtattc gacaaattac gccgtctgaa agcgtggtgg 420  
 attgccccgg ccgcacaaac cgtcatcggc aatgcactgg acacgttagt attttttgcc 480  
 gttgcctttt acgcaagcag cgatgaattt atggcggcaa actggcaggg catcgctttt 540  
 gtcgattacc tgttcaaact taccgtctgc accctcttct tccgtcccgc ctacggcggtg 600  
 atactgaatc tgctgacgaa aaaactgacg gccctgcaaa ccaaacaggc gcaagaccgc 660  
 cccgtgccct cgctgcaaaa tccgtaa 687

<210> 266  
 <211> 228  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 266  
 Met Tyr Ala Leu Thr Ala Ala Gln Gln Gln Lys Ala Leu Phe Arg Leu  
 1 5 10 15  
 Val Leu Phe His Ile Leu Ile Ile Ala Ala Ser Asn Tyr Leu Val Gln  
 20 25 30  
 Phe Pro Phe Arg Ile Phe Gly Ile His Thr Thr Trp Gly Ala Phe Ser  
 35 40 45  
 Phe Pro Phe Ile Phe Leu Ala Thr Asp Leu Thr Val Arg Ile Phe Gly  
 50 55 60  
 Ser His Leu Ala Arg Arg Ile Ile Phe Trp Val Met Phe Pro Ala Leu  
 65 70 75 80  
 Ser Leu Ser Tyr Val Phe Ser Val Leu Phe His Asn Gly Ser Trp Thr  
 85 90 95  
 Gly Leu Gly Ala Pro Ser Gln Phe Asn Thr Phe Val Gly Arg Ile Ala  
 100 105 110  
 Leu Ala Ser Phe Ala Ala Tyr Ala Leu Gly Gln Ile Leu Asp Ile Phe  
 115 120 125  
 Val Phe Asp Lys Leu Arg Arg Leu Lys Ala Trp Trp Ile Ala Pro Ala

130

135

140

Ala Ser Thr Val Ile Gly Asn Ala Leu Asp Thr Leu Val Phe Phe Ala  
145 150 155 160

Val Ala Phe Tyr Ala Ser Ser Asp Glu Phe Met Ala Ala Asn Trp Gln  
165 170 175

Gly Ile Ala Phe Val Asp Tyr Leu Phe Lys Leu Thr Val Cys Thr Leu  
180 185 190

Phe Phe Leu Pro Ala Tyr Gly Val Ile Leu Asn Leu Leu Thr Lys Lys  
195 200 205

Leu Thr Ala Leu Gln Thr Lys Gln Ala Gln Asp Arg Pro Val Pro Ser  
210 215 220

Leu Gln Asn Pro  
225

<210> 267

<211> 519

<212> DNA

<213> Neisseria meningitidis

<400> 267

atgggtcataa	aatatacaaaa	tttgaatttt	gcgaaattgt	cgataattgc	aattttgatg	60
atgtattcgt	ttgaagcgaa	tgcaaaygca	gtmwraatat	ctgaaactgt	ttcagttgat	120
accggacaag	gtgcgaaaat	tcataagttt	gtacctaaaa	atagtaaaac	ttattcatct	180
gatttaataa	aaacggtaga	tttaacacac	ayycctacgg	gcgcaaaagc	ccgaatcaac	240
gccaaaataa	ccgccagcgt	atccccgcgc	ggcgtattgg	cggggggtcgg	caaacttgcc	300
cgcttagggc	cgaaattcag	cacaagggcg	gttccctatg	tcggaacagc	ccttttagcc	360
cacgacgtat	acgaaacttt	caaagaagac	atacaggcac	gaggctacca	atacgacccc	420
gaaaccgaca	aatttgtaaa	aggctacgaa	tatagtaatt	gcctttggta	cgaagacaaa	480
agacgtatta	atagaaccta	tggtgcttac	ggcgttgat			519

<210> 268

<211> 173

<212> PRT

<213> Neisseria meningitidis

<220>

<221> misc\_feature

<222> (32)..(32)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (71)..(71)

<223> Xaa= any amino acid

<400> 268

Met	Val	Ile	Lys	Tyr	Thr	Asn	Leu	Asn	Phe	Ala	Lys	Leu	Ser	Ile	Ile
1			5						10					15	

Ala Ile Leu Met Met Tyr Ser Phe Glu Ala Asn Ala Asn Ala Val Xaa



Ile Ser Glu Thr Val Ser Val Asp Thr Gly Gln Gly Ala Lys Ile His  
35 40 45

Lys Phe Val Pro Lys Asn Ser Lys Thr Tyr Ser Ser Asp Leu Ile Lys  
50 55 60

Thr Val Asp Leu Thr His Ile Pro Thr Gly Ala Lys Ala Arg Ile Asn  
65 70 75 80

Ala Lys Ile Thr Ala Ser Val Ser Arg Ala Gly Val Leu Ala Gly Val  
85 90 95

Gly Lys Leu Ala Arg Leu Gly Ala Lys Phe Ser Thr Arg Ala Val Pro  
100 105 110

Tyr Val Gly Thr Ala Leu Leu Ala His Asp Val Tyr Glu Thr Phe Lys  
115 120 125

Glu Asp Ile Gln Ala Arg Gly Tyr Gln Tyr Asp Pro Glu Thr Asp Lys  
130 135 140

Phe Ala Lys Val Ser Gly  
145 150

<210> 271  
<211> 453  
<212> DNA  
<213> Neisseria meningitidis

<400> 271  
atggtcataa aatatacaaaa tttgaatttt gcgaaattgt cgataattgc aattttgatg 60  
atgtattcgt ttgaagcgaa tgcaaattgca gtaaaaaatat ctgaaactgt ttcagttgat 120  
accggacaag gtgcgaaaat tcataagttt gtacctaaaa atagtaaaac ttattcatct 180  
gatttaataa aaacggtaga tttaacacac atccctacgg gcgcaaaaagc ccgaatcaac 240  
gccaaaataa ccgccagcgt atcccgcgcc ggcgtattgg cggggggtcgg caaacttgcc 300  
cgcttaggcg cgaaattcag cacaagggcg gttccctatg tcggaacagc ccttttagcc 360  
cacgacgtat acgaaacttt caaagaagac atacaggcac gaggctacca atacgacccc 420  
gaaaccgaca aatttgcaaa ggtctcaggc taa 453

<210> 272  
<211> 150  
<212> PRT  
<213> Neisseria meningitidis

<400> 272  
Met Val Ile Lys Tyr Thr Asn Leu Asn Phe Ala Lys Leu Ser Ile Ile  
1 5 10 15

Ala Ile Leu Met Met Tyr Ser Phe Glu Ala Asn Ala Asn Ala Val Lys  
20 25 30

Ile Ser Glu Thr Val Ser Val Asp Thr Gly Gln Gly Ala Lys Ile His  
35 40 45

Lys Phe Val Pro Lys Asn Ser Lys Thr Tyr Ser Ser Asp Leu Ile Lys  
50 55 60

Thr Val Asp Leu Thr His Ile Pro Thr Gly Ala Lys Ala Arg Ile Asn  
65 70 75 80

Ala Lys Ile Thr Ala Ser Val Ser Arg Ala Gly Val Leu Ala Gly Val  
85 90 95

Gly Lys Leu Ala Arg Leu Gly Ala Lys Phe Ser Thr Arg Ala Val Pro  
100 105 110

Tyr Val Gly Thr Ala Leu Leu Ala His Asp Val Tyr Glu Thr Phe Lys  
115 120 125

Glu Asp Ile Gln Ala Arg Gly Tyr Gln Tyr Asp Pro Glu Thr Asp Lys  
130 135 140

Phe Ala Lys Val Ser Gly  
145 150

<210> 273  
<211> 8  
<212> DNA  
<213> Neisseria gonorrhoeae

<220>  
<221> misc\_feature  
<222> (1)..(8)  
<223> N= Unknown

<400> 273  
nnnnnnnn

8

<210> 274  
<211> 526  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 274  
Met Val Thr Lys His Thr Asn Leu Asn Phe Ala Lys Leu Ser Ile Ile  
1 5 10 15

Ala Ile Leu Met Met Tyr Ser Phe Glu Ala Asn Ala Asn Ala Val Lys  
20 25 30

Ile Ser Glu Thr Leu Ser Val Asp Thr Gly Gln Gly Ala Lys Val His  
35 40 45

Lys Phe Val Pro Lys Ser Ser Asn Ile Tyr Ser Ser Asp Leu Thr Lys  
50 55 60

Ala Val Asp Leu Thr His Ile Pro Thr Gly Ala Lys Ala Arg Ile Asn  
65 70 75 80

Ala Lys Ile Thr Ala Ser Val Ser Arg Ala Gly Val Leu Ser Gly Val  
85 90 95

Gly Lys Leu Val Arg Gln Gly Ala Lys Phe Gly Thr Arg Ala Val Pro

100					105					110					
Tyr	Val	Gly	Thr	Ala	Leu	Leu	Ala	His	Asp	Val	Tyr	Glu	Thr	Phe	Lys
		115					120					125			
Glu	Asp	Ile	Gln	Ala	Arg	Gly	Cys	Arg	Tyr	Asp	Pro	Glu	Thr	Asp	Lys
	130					135					140				
Phe	Val	Lys	Gly	Tyr	Glu	Tyr	Ala	Asn	Cys	Leu	Trp	Tyr	Glu	Asp	Glu
145						150					155				160
Arg	Arg	Ile	Asn	Arg	Thr	Tyr	Gly	Cys	Tyr	Gly	Val	Asp	Ser	Ser	Ile
			165						170					175	
Met	Arg	Leu	Met	Pro	Asp	Arg	Ser	Arg	Phe	Pro	Glu	Val	Lys	Gln	Leu
			180					185					190		
Met	Glu	Ser	Gln	Met	Tyr	Arg	Leu	Ala	Arg	Pro	Phe	Trp	Asn	Trp	Arg
		195					200					205			
Lys	Glu	Glu	Leu	Asn	Lys	Leu	Ser	Ser	Leu	Asp	Trp	Asn	Asn	Phe	Val
	210					215					220				
Leu	Asn	Arg	Cys	Thr	Phe	Asp	Trp	Asn	Gly	Gly	Gly	Cys	Ala	Val	Asn
225						230					235				240
Lys	Gly	Asp	Asp	Phe	Arg	Ala	Gly	Ala	Ser	Phe	Ser	Leu	Gly	Arg	Asn
				245					250					255	
Pro	Lys	Tyr	Lys	Glu	Glu	Met	Asp	Ala	Lys	Lys	Pro	Glu	Glu	Ile	Leu
			260					265						270	
Ser	Leu	Lys	Val	Asp	Ala	Asp	Pro	Asp	Lys	Tyr	Ile	Glu	Ala	Thr	Gly
		275					280					285			
Tyr	Pro	Gly	Tyr	Ser	Glu	Lys	Val	Glu	Val	Ala	Pro	Gly	Thr	Lys	Val
	290					295					300				
Asn	Met	Gly	Pro	Val	Thr	Asp	Arg	Asn	Gly	Asn	Pro	Val	Gln	Val	Ala
305						310					315				320
Ala	Thr	Phe	Gly	Arg	Asp	Ala	Gln	Gly	Asn	Thr	Thr	Ala	Asp	Val	Gln
				325					330					335	
Val	Ile	Pro	Arg	Pro	Asp	Leu	Thr	Pro	Ala	Ser	Ala	Glu	Ala	Pro	His
			340					345					350		
Ala	Gln	Pro	Leu	Pro	Glu	Val	Ser	Pro	Ala	Glu	Asn	Pro	Ala	Asn	Asn
		355					360					365			
Pro	Asp	Pro	Asp	Glu	Asn	Pro	Gly	Thr	Arg	Pro	Asn	Pro	Glu	Pro	Asp
	370					375					380				
Pro	Asp	Leu	Asn	Pro	Asp	Ala	Asn	Pro	Asp	Thr	Asp	Gly	Gln	Pro	Gly
385						390					395				400

Thr Ser Pro Asp Ser Pro Ala Val Pro Asp Arg Pro Asn Gly Arg His  
 405 410 415

Arg Lys Glu Arg Lys Glu Gly Glu Asp Gly Gly Leu Ser Cys Asp Tyr  
 420 425 430

Phe Pro Glu Ile Leu Ala Cys Gln Glu Met Gly Lys Pro Ser Asp Arg  
 435 440 445

Met Phe His Asp Ile Ser Ile Pro Gln Val Thr Asp Asp Lys Thr Trp  
 450 455 460

Ser Ser His Asn Phe Leu Pro Ser Asn Gly Val Cys Pro Gln Pro Lys  
 465 470 475 480

Thr Phe His Val Phe Gly Arg Gln Tyr Arg Ala Ser Tyr Glu Pro Leu  
 485 490 495

Cys Val Phe Ala Glu Lys Ile Arg Phe Ala Val Leu Leu Ala Phe Ile  
 500 505 510

Ile Met Ser Ala Phe Val Val Phe Gly Ser Leu Gly Gly Glu  
 515 520 525

<210> 275  
 <211> 435  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 275  
 atggtcacaa aacatacaaa tttgaatttt gcgaaattgt cgataattgc aattttgatg 60  
 atgtattcgt ttgaagcgaa tgcaaagca gtaaaaatat ctgaaactct ttcggttgat 120  
 accggacaag gcgcgaaagt tcataagttc gttcctaaat caagtaatat ttattcatct 180  
 gatttaacaa aagcggtaga tttaacgcat atccccacgg gcgcaaaagc ccgaatcaac 240  
 gccaaaataa ccgccagcgt atccccgcgc gccgtattgt cggggggtcgg caaacttgtc 300  
 cgccaaggcg cgaaattcgg cacaaggcg gttccctatg tcggaacagc ccttttagcc 360  
 cagacgtat acgaaacttt caaagaagac atacaggcac gaggctgccg atacgatccc 420  
 gaaaccgaca aattt 435

<210> 276  
 <211> 145  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 276  
 Met Val Thr Lys His Thr Asn Leu Asn Phe Ala Lys Leu Ser Ile Ile  
 1 5 10 15  
 Ala Ile Leu Met Met Tyr Ser Phe Glu Ala Asn Ala Asn Ala Val Lys  
 20 25 30  
 Ile Ser Glu Thr Leu Ser Val Asp Thr Gly Gln Gly Ala Lys Val His  
 35 40 45  
 Lys Phe Val Pro Lys Ser Ser Asn Ile Tyr Ser Ser Asp Leu Thr Lys  
 50 55 60



Ala Val Asp Leu Thr His Ile Pro Thr Gly Ala Lys Ala Arg Ile Asn  
65 70 75 80

Ala Lys Ile Thr Ala Ser Val Ser Arg Ala Gly Val Leu Ser Gly Val  
85 90 95

Gly Lys Leu Val Arg Gln Gly Ala Lys Phe Gly Thr Arg Ala Val Pro  
100 105 110

Tyr Val Gly Thr Ala Leu Leu Ala His Asp Val Tyr Glu Thr Phe Lys  
115 120 125

Glu Asp Ile Gln Ala Arg Gly Cys Arg Tyr Asp Pro Glu Thr Asp Lys  
130 135 140

Phe  
145

<210> 277  
<211> 229  
<212> DNA  
<213> Neisseria meningitidis

<400> 277  
atgagatttt tccgtatcgg ttttttggtg ctgctgtttt tggagattat gtcgattgtg 60  
tggtttgccg attggtcggg cggcggctgg acgttggttt tgatggcggc aggttttgcc 120  
gccggcgtgc tgatgctcag gcaaaccggg gctgaccggt cttttattgg cgggcgcggc 180  
aatgagaagc ggcgggaagg tatccgttta tcagatgttg tggcctatc 229

<210> 278  
<211> 76  
<212> PRT  
<213> Neisseria meningitidis

<400> 278  
Met Arg Phe Phe Gly Ile Gly Phe Leu Val Leu Leu Phe Leu Glu Ile  
1 5 10 15

Met Ser Ile Val Trp Val Ala Asp Trp Leu Gly Gly Gly Trp Thr Leu  
20 25 30

Phe Leu Met Ala Ala Gly Phe Ala Ala Gly Val Leu Met Leu Arg Gln  
35 40 45

Thr Gly Leu Thr Gly Leu Leu Leu Ala Gly Ala Ala Met Arg Ser Gly  
50 55 60

Gly Lys Val Ser Val Tyr Gln Met Leu Trp Pro Ile  
65 70 75

<210> 279  
<211> 486  
<212> DNA  
<213> Neisseria meningitidis

<400> 279

atgagatttt	tcggtatcgg	ttttttggtg	ctgctgtttt	tggagattat	gtcgaattgtg	60
tgggttgccg	attggctggg	cggcggctgg	acgttgtttt	tgatggcggc	aggttttgcc	120
gccggcggtc	tgatgctcag	gcatacgggg	ctgtccggtc	ttttattggc	gggcgcggca	180
atgagaagcg	gcgggagggt	atccgtttat	cagatgttgt	ggcctatccg	ttatacgggtg	240
gcggctgtgt	gtctgatgag	tccgggattc	gtatcctcgg	tgttggcggg	attgctgctg	300
ctgccgttta	agggaggggc	agtgttgcag	gcaggagggtg	cggaaaattt	tttcaacatg	360
aaccaatcgg	gcagaaaaga	gggcttttcc	cgcgatgacg	atattatcga	gggagaatat	420
acggttgaag	agccttacgg	cggcaatcgt	tcccgaacg	ccatcgaaca	caaaaaagac	480
gaataa						486

<210> 280  
 <211> 161  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 280  
 Met Arg Phe Phe Gly Ile Gly Phe Leu Val Leu Leu Phe Leu Glu Ile  
 1 5 10 15  
 Met Ser Ile Val Trp Val Ala Asp Trp Leu Gly Gly Gly Trp Thr Leu  
 20 25 30  
 Phe Leu Met Ala Ala Gly Phe Ala Ala Gly Val Leu Met Leu Arg His  
 35 40 45  
 Thr Gly Leu Ser Gly Leu Leu Leu Ala Gly Ala Ala Met Arg Ser Gly  
 50 55 60  
 Gly Arg Val Ser Val Tyr Gln Met Leu Trp Pro Ile Arg Tyr Thr Val  
 65 70 75 80  
 Ala Ala Val Cys Leu Met Ser Pro Gly Phe Val Ser Ser Val Leu Ala  
 85 90 95  
 Val Leu Leu Leu Leu Pro Phe Lys Gly Gly Ala Val Leu Gln Ala Gly  
 100 105 110  
 Gly Ala Glu Asn Phe Phe Asn Met Asn Gln Ser Gly Arg Lys Glu Gly  
 115 120 125  
 Phe Ser Arg Asp Asp Asp Ile Ile Glu Gly Glu Tyr Thr Val Glu Glu  
 130 135 140  
 Pro Tyr Gly Gly Asn Arg Ser Arg Asn Ala Ile Glu His Lys Lys Asp  
 145 150 155 160  
 Glu

<210> 281  
 <211> 486  
 <212> DNA  
 <213> *Neisseria meningitidis*  
 <220>  
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<222> (213)..(213)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (224)..(224)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (254)..(254)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (284)..(284)  
<223> N= Unknown

<220>  
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<222> (298)..(298)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (303)..(303)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (366)..(366)  
<223> N= Unknown

<220>  
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<222> (381)..(381)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (385)..(385)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (432)..(432)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (446)..(446)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (463)..(463)

<223> N= Unknown

<220>

<221> misc\_feature

<222> (465)..(465)

<223> N= Unknown

<400> 281

atgagatttt	tcggtatcgg	ttttttggtg	ctgctgtttt	tgagattat	gtcgattgtg	60
tggttgccg	attggttggg	cggcggttgg	acgctgtttc	taatggcggc	aacctttgcc	120
gccggcgtgg	tgatgctcag	gcatacgggg	ctgtccggtc	ttttattggc	gggcgcggca	180
atgagaagcg	gcgggagggg	atccgtttat	canatgttgt	ggcntatccg	ttatacggtg	240
gcggcggtgt	gtcngatgag	tccgggattc	gtatcctcgg	tgtnggcggg	attgctgntg	300
ctnccgttta	agggaggtgc	agtgttgcag	gcaggaggtg	cggaaaattt	tttcaacatg	360
aaccantcgg	gcagaaaaga	nggcntttcc	cgcgatgacg	atattatcga	gggggaatat	420
acggttgaag	anccttacgg	cggcantcgt	ttccgaaacg	ccntngaaca	caaaaaagac	480
gaataa						486

<210> 282

<211> 161

<212> PRT

<213> Neisseria meningitidis

<220>

<221> misc\_feature

<222> (71)..(71)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (75)..(75)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (85)..(85)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (95)..(95)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (100)..(100)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (122)..(122)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (127)..(127)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (129)..(129)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (144)..(144)

<223> Xaa= any amino acid

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<221> misc\_feature

<222> (149)..(149)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (155)..(155)

<223> Xaa= any amino acid

<400> 282

Met Arg Phe Phe Gly Ile Gly Phe Leu Val Leu Leu Phe Leu Glu Ile  
1 5 10 15

Met Ser Ile Val Trp Val Ala Asp Trp Leu Gly Gly Gly Trp Thr Leu  
20 25 30

Phe Leu Met Ala Ala Thr Phe Ala Ala Gly Val Val Met Leu Arg His  
35 40 45

Thr Gly Leu Ser Gly Leu Leu Ala Gly Ala Ala Met Arg Ser Gly  
50 55 60

Gly Arg Val Ser Val Tyr Xaa Met Leu Trp Xaa Ile Arg Tyr Thr Val  
65 70 75 80

Ala Ala Val Cys Xaa Met Ser Pro Gly Phe Val Ser Ser Val Xaa Ala  
85 90 95

Val Leu Leu Xaa Leu Pro Phe Lys Gly Gly Ala Val Leu Gln Ala Gly  
100 105 110

Gly Ala Glu Asn Phe Phe Asn Met Asn Xaa Ser Gly Arg Lys Xaa Gly  
115 120 125

Xaa Ser Arg Asp Asp Asp Ile Ile Glu Gly Glu Tyr Thr Val Glu Xaa  
130 135 140

Pro Tyr Gly Gly Xaa Arg Phe Arg Asn Ala Xaa Glu His Lys Lys Asp  
145 150 155 160

Glu

<210> 283  
 <211> 486  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 283  
 atgagatttt tccggtatcgg ttttttggtg ctgctgtttt tggaaattat gtcgattgtg 60  
 tgggttgccg attggctggg cggcgggttg acgctgtttc taatggcggc aacctttgcc 120  
 gccggtgtgc tgatgctcag gcatacgggg ctgtccggtc ttttattggc tggcgcggcg 180  
 gtaaaaagta gtgggaaggt atctgtttat cagatgttgt ggcctatccg ttatacgggtg 240  
 gcggcgggtg gtctgatgag tccgggattc gtatcctccg tgttggcggg attgctgctg 300  
 ctgccgttta agggaggggc agtgttgcag gcaggagggt cgaaaaattt tttcaacatg 360  
 aaccaatcgg gcagaaaaga gggatttttc cacgatgacg atattatcga gggagaatat 420  
 acggttgaaa aacctgacgg cggcaatcgt tcccgaacg ccatcgaaca cgaaaaagac 480  
 gaataa 486

<210> 284  
 <211> 161  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 284  
 Met Arg Phe Phe Gly Ile Gly Phe Leu Val Leu Leu Phe Leu Glu Ile  
 1 5 10 15  
 Met Ser Ile Val Trp Val Ala Asp Trp Leu Gly Gly Gly Trp Thr Leu  
 20 25 30  
 Phe Leu Met Ala Ala Thr Phe Ala Ala Gly Val Leu Met Leu Arg His  
 35 40 45  
 Thr Gly Leu Ser Gly Leu Leu Leu Ala Gly Ala Ala Val Lys Ser Ser  
 50 55 60  
 Gly Lys Val Ser Val Tyr Gln Met Leu Trp Pro Ile Arg Tyr Thr Val  
 65 70 75 80  
 Ala Ala Val Cys Leu Met Ser Pro Gly Phe Val Ser Ser Val Leu Ala  
 85 90 95  
 Val Leu Leu Leu Leu Pro Phe Lys Gly Gly Ala Val Leu Gln Ala Gly  
 100 105 110  
 Gly Ala Glu Asn Phe Phe Asn Met Asn Gln Ser Gly Arg Lys Glu Gly  
 115 120 125  
 Phe Phe His Asp Asp Asp Ile Ile Glu Gly Glu Tyr Thr Val Glu Lys  
 130 135 140  
 Pro Asp Gly Gly Asn Arg Ser Arg Asn Ala Ile Glu His Glu Lys Asp  
 145 150 155 160  
 Glu

<210> 285

<211> 862  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 285  
 atgtttgttt ttcagacggc attcttatgt ttcagaaaca tttgcagaaa gcctccgaca 60  
 gcgtcgtcgg agggacatta tacgtggttg ccacgcccac cggcaatttg gcggacatta 120  
 ccctgcgcgc tttggcggtta ttgcaaaaagg cggccgaaga cacgcgcgtt accgcacagc 180  
 ttttgagcgc gtacggcatt cagggcaaac tcgtcagtgt gcgcgaacac aacgaacggc 240  
 agatggcgga caagattgtc ggctatcttt cagacggcat gggtgtggca caggtttccg 300  
 atgcgggtac gccggccgtg tgcgacccgg gcgcgaaact cggccgcccgc gtgcgtgagg 360  
 ccgggtttta agtcgttccc gtcgtgggcg caacgcggtg atggcggcct tgagcgtggc 420  
 cgggtgtgaa ggatccgatt tttatttcaa cggttttgta ccgccgaaat cgggagaacg 480  
 caggaaactg tttgccaaat ggggtgcgggc ggcgtttctt atcgtcatgt ttgaaacgcc 540  
 gcaccgcacg ggtgcagcgc ttgccgatat ggccggaactg ttccccgaac gccgattaat 600  
 gctggcgcgc gaaattacga aaacgtttga aacgttctta agcggcacgg ttgggggaaat 660  
 tcagacggca ttgtctgccc acggcgacca atcgcgcggc gagatgggtg ttggtgcttta 720  
 tccggcgcgag gatgaaaaac acgaaggctt gtccgagtcg gcgcaaaaaca tcatgaaaat 780  
 cctcacagcc gagctgccga ccaaacaggc ggccggagctt gctgccaaaa tcacgggcca 840  
 gggaaagaaa gctttgtacg at 862

<210> 286  
 <211> 288  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (9)..(9)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (132)..(132)  
 <223> Xaa= any amino acid

<400> 286  
 Met Phe Val Phe Gln Thr Ala Phe Xaa Met Phe Gln Lys His Leu Gln  
 1 5 10 15  
 Lys Ala Ser Asp Ser Val Val Gly Gly Thr Leu Tyr Val Val Ala Thr  
 20 25 30  
 Pro Ile Gly Asn Leu Ala Asp Ile Thr Leu Arg Ala Leu Ala Val Leu  
 35 40 45  
 Gln Lys Ala Ala Glu Asp Thr Arg Val Thr Ala Gln Leu Leu Ser Ala  
 50 55 60  
 Tyr Gly Ile Gln Gly Lys Leu Val Ser Val Arg Glu His Asn Glu Arg  
 65 70 75 80  
 Gln Met Ala Asp Lys Ile Val Gly Tyr Leu Ser Asp Gly Met Val Val  
 85 90 95  
 Ala Gln Val Ser Asp Ala Gly Thr Pro Ala Val Cys Asp Pro Gly Ala

100	105	110
Lys Leu Ala Arg Arg Val Arg Glu Ala Gly Phe Lys Val Val Pro Val 115 120 125		
Val Gly Ala Xaa Ala Val Met Ala Ala Leu Ser Val Ala Gly Val Glu 130 135 140		
Gly Ser Asp Phe Tyr Phe Asn Gly Phe Val Pro Lys Ser Gly Glu 145 150 155 160		
Arg Arg Lys Leu Phe Ala Lys Trp Val Arg Ala Ala Phe Pro Ile Val 165 170 175		
Met Phe Glu Thr Pro His Arg Ile Gly Ala Ala Leu Ala Asp Met Ala 180 185 190		
Glu Leu Phe Pro Glu Arg Arg Leu Met Leu Ala Arg Glu Ile Thr Lys 195 200 205		
Thr Phe Glu Thr Phe Leu Ser Gly Thr Val Gly Glu Ile Gln Thr Ala 210 215 220		
Leu Ser Ala Asp Gly Asp Gln Ser Arg Gly Glu Met Val Leu Val Leu 225 230 235 240		
Tyr Pro Ala Gln Asp Glu Lys His Glu Gly Leu Ser Glu Ser Ala Gln 245 250 255		
Asn Ile Met Lys Ile Leu Thr Ala Glu Leu Pro Thr Lys Gln Ala Ala 260 265 270		
Glu Leu Ala Ala Lys Ile Thr Gly Glu Gly Lys Lys Ala Leu Tyr Asp 275 280 285		

<210> 287  
 <211> 876  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 287					
atgtttcaga aacatttgca gaaagcctcc gacagcgctcg tcggaggggac attatacgtg	60				
gttgccacgc ccacggaac tttggcggac attaccctgc gcgctttggc ggtattgcaa	120				
aaggcggaca tcatctgtgc cgaagacacg cgcgttaccg cacagctttt gagcgcgtac	180				
ggcattcagg gcaaactcgt cagtgtgcgc gaacacaacg aacggcagat ggcggacaag	240				
attgtcggct atctttcaga cggcatggtt gtggcacagg tttccgatgc gggtagccg	300				
gccgtgtgcg acccggggcg gaaactcgcc cgccgcgtgc gtgaggccgg gtttaaagtc	360				
gttcccgtcg tgggcgcaag cgcggtgatg gcggctttga gcgtggccgg tgtggaagga	420				
tccgattttt atttcaacgg ttttgtagcg ccgaaatcgg gagaacgcag gaaactgttt	480				
gccaaatggg tgcggggcgg gtttcctatc gtcattgttg aaacgccgca ccgcatcggt	540				
gcgacgcttg ccgatatggc ggaactgttc cccgaacgcc gattaatgct ggcgcgcgaa	600				
attacgaaaa cgtttgaaac gttcttaagc ggcacgggtg gggaaattca gacggcattg	660				
tctgccgacg gcaaccaatc gcgcggcgag atgggtgttg tgctttatcc ggcgcaggat	720				
gaaaaaacacg aaggcttgct cgagtcgcgc caaaacatca tgaaaatcct cacagccgag	780				
ctgccgacca aacaggcggc ggagcttgct gccaaaatca cgggcgaggg aaagaaagct	840				
ttgtacgatc tggctctgtc ttggaaaaac aaatag	876				



<210> 288  
<211> 291  
<212> PRT  
<213> Neisseria meningitidis

<400> 288

Met	Phe	Gln	Lys	His	Leu	Gln	Lys	Ala	Ser	Asp	Ser	Val	Val	Gly	Gly	
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Thr	Leu	Tyr	Val	Val	Ala	Thr	Pro	Ile	Gly	Asn	Leu	Ala	Asp	Ile	Thr	
			20					25					30			
Leu	Arg	Ala	Leu	Ala	Val	Leu	Gln	Lys	Ala	Asp	Ile	Ile	Cys	Ala	Glu	
		35					40					45				
Asp	Thr	Arg	Val	Thr	Ala	Gln	Leu	Leu	Ser	Ala	Tyr	Gly	Ile	Gln	Gly	
	50					55					60					
Lys	Leu	Val	Ser	Val	Arg	Glu	His	Asn	Glu	Arg	Gln	Met	Ala	Asp	Lys	
65					70					75					80	
Ile	Val	Gly	Tyr	Leu	Ser	Asp	Gly	Met	Val	Val	Ala	Gln	Val	Ser	Asp	
				85					90						95	
Ala	Gly	Thr	Pro	Ala	Val	Cys	Asp	Pro	Gly	Ala	Lys	Leu	Ala	Arg	Arg	
			100						105					110		
Val	Arg	Glu	Ala	Gly	Phe	Lys	Val	Val	Pro	Val	Val	Gly	Ala	Ser	Ala	
		115					120					125				
Val	Met	Ala	Ala	Leu	Ser	Val	Ala	Gly	Val	Glu	Gly	Ser	Asp	Phe	Tyr	
	130					135					140					
Phe	Asn	Gly	Phe	Val	Pro	Pro	Lys	Ser	Gly	Glu	Arg	Arg	Lys	Leu	Phe	
145					150					155					160	
Ala	Lys	Trp	Val	Arg	Ala	Ala	Phe	Pro	Ile	Val	Met	Phe	Glu	Thr	Pro	
				165					170					175		
His	Arg	Ile	Gly	Ala	Thr	Leu	Ala	Asp	Met	Ala	Glu	Leu	Phe	Pro	Glu	
		180						185					190			
Arg	Arg	Leu	Met	Leu	Ala	Arg	Glu	Ile	Thr	Lys	Thr	Phe	Glu	Thr	Phe	
		195					200					205				
Leu	Ser	Gly	Thr	Val	Gly	Glu	Ile	Gln	Thr	Ala	Leu	Ser	Ala	Asp	Gly	
	210					215					220					
Asn	Gln	Ser	Arg	Gly	Glu	Met	Val	Leu	Val	Leu	Tyr	Pro	Ala	Gln	Asp	
225					230					235					240	
Glu	Lys	His	Glu	Gly	Leu	Ser	Glu	Ser	Ala	Gln	Asn	Ile	Met	Lys	Ile	
			245						250					255		
Leu	Thr	Ala	Glu	Leu	Pro	Thr	Lys	Gln	Ala	Ala	Glu	Leu	Ala	Ala	Lys	
		260						265					270			

Ile Thr Gly Glu Gly Lys Lys Ala Leu Tyr Asp Leu Ala Leu Ser Trp  
 275 280 285

Lys Asn Lys  
 290

<210> 289  
 <211> 876  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 289  
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 gttgccacgc ccacgcggcaa tttggcggac attaccctgc gcgctttggc ggtattgcaa 120  
 aaggcggaca tcactctgtgc cgaagacacg cgcgttaccg cgcagctttt gagcgcgtac 180  
 ggcatcagg gcaaactcgt cagcgtgcgc gaacacaacg aacggcagat ggcggacaag 240  
 attgtcggct atctttcaga cggcatgggt gtggcacagg tttccgatgc gggtagcccg 300  
 gccgtgtgcg acccgggcgc gaaactcgcc cgcgcgctgc gtgaggtcgg gtttaaagtt 360  
 gtccctgttg tcggcgcaag cgcggtgatg gcggttttga gtgtggctgg tgtggcggga 420  
 tccgattttt atttcaacgg ttttgtaccg ccgaaatcgg gcgaacgtag gaaattgttt 480  
 gccaaatggg tcggggtggc gtttcccgtc gtgatgtttg aaacgccgca ccgcacggg 540  
 gcgacgcttg ccgatatggc ggaactgttc cccgaacgcc gattaatgct ggcgcgcgaa 600  
 atcacgaaaa cgtttgaaac gttcttaagc ggcacggttg gggaaattca gacggcattg 660  
 gcggcggacg gcaaccaatc gcgcggcgag atggtgttgg tgctttatcc ggcgaggat 720  
 gaaaaacacg aaggcttgtc cgagtccgcg caaaacatca tgaaaatcct cacagccgag 780  
 ctgccgacca aacaggcggc ggagcttgcc gccaaaatca cgggcgaggg aaaaaaagct 840  
 ttgtacgatc tggcactgtc ttggaaaaac aatga 876

<210> 290  
 <211> 291  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 290  
 Met Phe Gln Lys His Leu Gln Lys Ala Ser Asp Ser Val Val Gly Gly  
 1 5 10 15  
 Thr Leu Tyr Val Val Ala Thr Pro Ile Gly Asn Leu Ala Asp Ile Thr  
 20 25 30  
 Leu Arg Ala Leu Ala Val Leu Gln Lys Ala Asp Ile Ile Cys Ala Glu  
 35 40 45  
 Asp Thr Arg Val Thr Ala Gln Leu Leu Ser Ala Tyr Gly Ile Gln Gly  
 50 55 60  
 Lys Leu Val Ser Val Arg Glu His Asn Glu Arg Gln Met Ala Asp Lys  
 65 70 75 80  
 Ile Val Gly Tyr Leu Ser Asp Gly Met Val Val Ala Gln Val Ser Asp  
 85 90 95  
 Ala Gly Thr Pro Ala Val Cys Asp Pro Gly Ala Lys Leu Ala Arg Arg  
 100 105 110  
 Val Arg Glu Val Gly Phe Lys Val Val Pro Val Val Gly Ala Ser Ala

115	120	125
Val Met Ala Ala Leu Ser	Val Ala Gly Val Ala Gly	Ser Asp Phe Tyr
130	135	140
Phe Asn Gly Phe Val Pro	Pro Lys Ser Gly Glu Arg	Arg Lys Leu Phe
145	150	155
Ala Lys Trp Val Arg Val	Ala Phe Pro Val Val Met	Phe Glu Thr Pro
	165	170
His Arg Ile Gly Ala Thr	Leu Ala Asp Met Ala Glu	Leu Phe Pro Glu
	180	185
Arg Arg Leu Met Leu Ala	Arg Glu Ile Thr Lys Thr	Phe Glu Thr Phe
	195	200
Leu Ser Gly Thr Val Gly	Glu Ile Gln Thr Ala Leu	Ala Ala Asp Gly
	210	215
Asn Gln Ser Arg Gly Glu	Met Val Leu Val Leu Tyr	Pro Ala Gln Asp
	225	230
Glu Lys His Glu Gly Leu	Ser Glu Ser Ala Gln Asn	Ile Met Lys Ile
	245	250
Leu Thr Ala Glu Leu Pro	Thr Lys Gln Ala Ala Glu	Leu Ala Ala Lys
	260	265
Ile Thr Gly Glu Gly Lys	Lys Ala Leu Tyr Asp Leu	Ala Leu Ser Trp
	275	280
Lys Asn Lys		
290		

<210> 291  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 291  
 nnnnnnnn

\_ 8

<210> 292  
 <211> 300  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 292  
 Met Ser Val Phe Gln Thr Ala Phe Phe Met Phe Gln Lys His Leu Gln  
 1 5 10 15

Lys Ala Ser Asp Ser Val Val Gly Gly Thr Leu Tyr Val Val Ala Thr  
 20 25 30  
 Pro Ile Gly Asn Leu Ala Asp Ile Thr Leu Arg Ala Leu Ala Val Leu  
 35 40 45  
 Gln Lys Ala Asp Ile Ile Cys Ala Glu Asp Thr Arg Val Thr Ala Gln  
 50 55 60  
 Leu Leu Ser Ala Tyr Gly Ile Gln Gly Arg Leu Val Ser Val Arg Glu  
 65 70 75 80  
 His Asn Glu Arg Gln Met Ala Asp Lys Val Ile Gly Phe Leu Ser Asp  
 85 90 95  
 Gly Leu Val Val Ala Gln Val Ser Asp Ala Gly Thr Pro Ala Val Cys  
 100 105 110  
 Asp Pro Gly Ala Lys Leu Ala Arg Arg Val Arg Glu Ala Gly Phe Lys  
 115 120 125  
 Val Val Pro Val Val Gly Ala Ser Ala Val Met Ala Ala Leu Ser Val  
 130 135 140  
 Ala Gly Val Ala Glu Ser Asp Phe Tyr Phe Asn Gly Phe Val Pro Pro  
 145 150 155 160  
 Lys Ser Gly Glu Arg Arg Lys Leu Phe Ala Lys Trp Val Arg Ala Ala  
 165 170 175  
 Phe Pro Val Val Met Phe Glu Thr Pro His Arg Ile Gly Ala Thr Leu  
 180 185 190  
 Ala Asp Met Ala Glu Leu Phe Pro Glu Arg Arg Leu Met Leu Ala Arg  
 195 200 205  
 Glu Ile Thr Lys Thr Phe Glu Thr Phe Leu Ser Gly Thr Val Gly Glu  
 210 215 220  
 Ile Gln Thr Ala Leu Ala Ala Asp Gly Asn Gln Ser Arg Gly Glu Met  
 225 230 235 240  
 Val Leu Val Leu Tyr Pro Ala Gln Asp Glu Lys His Glu Gly Leu Ser  
 245 250 255  
 Glu Ser Ala Gln Asn Ala Met Lys Ile Leu Ala Ala Glu Leu Pro Thr  
 260 265 270  
 Lys Gln Ala Ala Glu Leu Ala Ala Lys Ile Thr Gly Glu Gly Lys Lys  
 275 280 285  
 Ala Leu Tyr Asp Leu Ala Leu Ser Trp Lys Asn Lys  
 290 295 300

<210> 293

<211> 876

<212> DNA  
<213> Neisseria gonorrhoeae

<400> 293

atgtttcaga	aacacttgca	gaaagcctcc	gacagcgctcg	tcggaggggac	attatacgtg	60
gttgccacgc	ccatcgga	tttggcagac	attaccctgc	gcgctttggc	ggtattgcaa	120
aaggcggaca	tcatttggtc	cgaagacacg	cgcgttactg	cgcagctttt	gagcgcgtac	180
ggcattcagg	gcaggttggt	cagtgtgcgc	gaacacaacg	agcggcagat	ggcggacaag	240
gtaatcggtt	tcctttcaga	cggcctgggt	gtggcgagc	tttccgatgc	gggtacgccg	300
gccgtgtgcg	acccggggcg	gaaactcgcc	cgcgcgctgc	gcgaagcagg	gttcaaagtc	360
gttcccgtcg	tggggcgaag	cgcggtaatg	gcggcggtga	gtgtggccgg	tgtggcggaa	420
tccgattttt	atttcaacgg	ttttgtaccg	ccgaaatcgg	gcgaacgtag	gaaattgttt	480
gccaaatggg	tgcggggcgg	atttcctgtc	gtcatgtttg	aaacgccgca	ccgaatcggg	540
gcaacgcttg	ccgatatggc	ggaattgttc	cccgaacgcc	gtctgatgct	ggcgcgcgaa	600
atcacgaaaa	cgtttgaaac	gttcttaagc	ggcacgggtg	gggaaattca	gacggcattg	660
gcggcggacg	gcaaccaatc	gcgcggcgag	atggtgttgg	tgccttatcc	ggcgcaggat	720
gaaaaacacg	aaggcttggtc	cgagtctgcg	caaaatgcga	tgaaaatcct	tgcggccgag	780
ctgccgacca	agcaggcggc	ggagcttgcc	gccaaagatta	caggtgaggg	caaaaaggct	840
ttgtacgatt	tggcactgtc	gtggaaaaac	aatga			876

<210> 294  
<211> 291  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 294

Met	Phe	Gln	Lys	His	Leu	Gln	Lys	Ala	Ser	Asp	Ser	Val	Val	Gly	Gly
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Thr	Leu	Tyr	Val	Val	Ala	Thr	Pro	Ile	Gly	Asn	Leu	Ala	Asp	Ile	Thr
			20					25					30		
Leu	Arg	Ala	Leu	Ala	Val	Leu	Gln	Lys	Ala	Asp	Ile	Ile	Cys	Ala	Glu
	35						40					45			
Asp	Thr	Arg	Val	Thr	Ala	Gln	Leu	Leu	Ser	Ala	Tyr	Gly	Ile	Gln	Gly
	50					55					60				
Arg	Leu	Val	Ser	Val	Arg	Glu	His	Asn	Glu	Arg	Gln	Met	Ala	Asp	Lys
65				70					75					80	
Val	Ile	Gly	Phe	Leu	Ser	Asp	Gly	Leu	Val	Val	Ala	Gln	Val	Ser	Asp
			85					90						95	
Ala	Gly	Thr	Pro	Ala	Val	Cys	Asp	Pro	Gly	Ala	Lys	Leu	Ala	Arg	Arg
			100					105					110		
Val	Arg	Glu	Ala	Gly	Phe	Lys	Val	Val	Pro	Val	Val	Gly	Ala	Ser	Ala
	115						120					125			
Val	Met	Ala	Ala	Leu	Ser	Val	Ala	Gly	Val	Ala	Glu	Ser	Asp	Phe	Tyr
	130					135					140				
Phe	Asn	Gly	Phe	Val	Pro	Pro	Lys	Ser	Gly	Glu	Arg	Arg	Lys	Leu	Phe
145					150					155					160

Ala Lys Trp Val Arg Ala Ala Phe Pro Val Val Met Phe Glu Thr Pro  
165 170 175

His Arg Ile Gly Ala Thr Leu Ala Asp Met Ala Glu Leu Phe Pro Glu  
180 185 190

Arg Arg Leu Met Leu Ala Arg Glu Ile Thr Lys Thr Phe Glu Thr Phe  
195 200 205

Leu Ser Gly Thr Val Gly Glu Ile Gln Thr Ala Leu Ala Ala Asp Gly  
210 215 220

Asn Gln Ser Arg Gly Glu Met Val Leu Val Leu Tyr Pro Ala Gln Asp  
225 230 235 240

Glu Lys His Glu Gly Leu Ser Glu Ser Ala Gln Asn Ala Met Lys Ile  
245 250 255

Leu Ala Ala Glu Leu Pro Thr Lys Gln Ala Ala Glu Leu Ala Ala Lys  
260 265 270

Ile Thr Gly Glu Gly Lys Lys Ala Leu Tyr Asp Leu Ala Leu Ser Trp  
275 280 285

Lys Asn Lys  
290

<210> 295  
<211> 185  
<212> DNA  
<213> Neisseria meningitidis

<400> 295  
atgaaacaga aaaaaaccgc tgccgcagtt attgctgcaa tggtggcagg ttttgccggca 60  
gcaaagcacc cgaaatcgac ccggcttttg agttgggtcag aaaccagttg gagcaggggtt 120  
tgagacagga aaaagcccgcc ttgaaaatcg atgccctttt ggaagaaaac ggtgtcaaac 180  
cgtaa 185

<210> 296  
<211> 60  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (21)..(21)  
<223> Xaa= any amino acid

<400> 296  
Met Lys Gln Lys Lys Thr Ala Ala Ala Val Ile Ala Ala Met Leu Ala  
1 5 10 15

Gly Phe Ala Ala Xaa Lys Ala Pro Glu Ile Asp Pro Ala Leu Glu Leu  
20 25 30

Val Arg Asn Gln Leu Glu Gln Gly Leu Arg Gln Glu Lys Ala Arg Leu

Lys Ile Asp Ala Leu Leu Glu Glu Asn Gly Val Lys  
50 55 60

<210> 297  
<211> 759  
<212> DNA  
<213> Neisseria meningitidis

<400> 297  
atgaaacaga aaaaaaccgc tgccgcagtt attgctgcaa tgttggcagg ttttgccgca 60  
gccaaagcac ccgaaatcga cccggctttg gtggatacgc tgggtggcgca gatcatgcag 120  
caggcagacc ggcatgcgga gcagtcccaa aaaccggacg ggcaggcaat ccgaaacgat 180  
gccgtccgcc ggctacaaac tttggaagtt ttgaaaaaca gggcattgaa ggaaggtttg 240  
gataaggata aggatgtcca aaaccgcttt aaaatcgccg aagcgtcttt ttatgccgag 300  
gagtacgtcc gttttctgga acgttcggaa acggtttccg aagacgagct gcacaagttt 360  
tacgaacagc aaatccgcat gatcaaattg cagcaggtea gcttcgcaac cgaagaggag 420  
gcgcgtcagg cgcagcagct cctgctcaaa gggctgtctt ttgaagggtt gatgaagcgt 480  
tatccgaacg acgagcaggc ttttgacggt ttcattatgg cgcagcagct tcccagagcg 540  
ctggcttcgc agtttgccgc gatgaatcgg ggcgacgtta cccgcgatcc ggtcaaattg 600  
ggcgaacgct attatctgtt caaactcagc gaggtcggga aaaaccccca cgcgagcct 660  
ttcgagttgg tcagaaacca gttggagcag ggtttgagac aggaaaaagc ccgcttgaaa 720  
atcgatgccc ttttgaaga aaacggtgtc aaaccgtaa 759

<210> 298  
<211> 252  
<212> PRT  
<213> Neisseria meningitidis

<400> 298  
Met Lys Gln Lys Lys Thr Ala Ala Ala Val Ile Ala Ala Met Leu Ala  
1 5 10 15  
Gly Phe Ala Ala Ala Lys Ala Pro Glu Ile Asp Pro Ala Leu Val Asp  
20 25 30  
Thr Leu Val Ala Gln Ile Met Gln Gln Ala Asp Arg His Ala Glu Gln  
35 40 45  
Ser Gln Lys Pro Asp Gly Gln Ala Ile Arg Asn Asp Ala Val Arg Arg  
50 55 60  
Leu Gln Thr Leu Glu Val Leu Lys Asn Arg Ala Leu Lys Glu Gly Leu  
65 70 75 80  
Asp Lys Asp Lys Asp Val Gln Asn Arg Phe Lys Ile Ala Glu Ala Ser  
85 90 95  
Phe Tyr Ala Glu Tyr Val Arg Phe Leu Glu Arg Ser Glu Thr Val  
100 105 110  
Ser Glu Asp Glu Leu His Lys Phe Tyr Glu Gln Gln Ile Arg Met Ile  
115 120 125  
Lys Leu Gln Gln Val Ser Phe Ala Thr Glu Glu Glu Ala Arg Gln Ala

130

135

140

Gln Gln Leu Leu Leu Lys Gly Leu Ser Phe Glu Gly Leu Met Lys Arg  
145 150 155 160

Tyr Pro Asn Asp Glu Gln Ala Phe Asp Gly Phe Ile Met Ala Gln Gln  
165 170 175

Leu Pro Glu Pro Leu Ala Ser Gln Phe Ala Ala Met Asn Arg Gly Asp  
180 185 190

Val Thr Arg Asp Pro Val Lys Leu Gly Glu Arg Tyr Tyr Leu Phe Lys  
195 200 205

Leu Ser Glu Val Gly Lys Asn Pro Asp Ala Gln Pro Phe Glu Leu Val  
210 215 220

Arg Asn Gln Leu Glu Gln Gly Leu Arg Gln Glu Lys Ala Arg Leu Lys  
225 230 235 240

Ile Asp Ala Leu Leu Glu Glu Asn Gly Val Lys Pro  
245 250

&lt;210&gt; 299

&lt;211&gt; 759

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 299

atgaaacaga	aaaaaacgcg	tgccgcagtt	attgctgcaa	tggtggcagg	ttttgcgga	60
gccaaagcac	ccgaaatcga	cccggttttg	gtggatacgc	tggtggcgca	gatcatgcag	120
caggcagacc	ggcatgcgga	gcagtcctaa	aaaccggacg	ggcaggcaat	ccgaaacgat	180
gccgtccgtc	ggctgcaaac	tttgaagtt	ttgaaaaaca	gggcattgaa	ggaagggttg	240
gataaggata	aggatgtcca	aaaccgcttt	aaaatcgccg	aagcgtcttt	ttatgccgag	300
gagtacgtcc	gttttctgga	acgttcggaa	acggtttccg	aaagcgcact	gcgtcagttt	360
tatgagcggc	aaatccgcat	gatcaaattg	cagcaggtca	gcttcgcaac	cgaagaggag	420
gcgcgtcagg	cgcagcagct	cctgctcaaa	gggctgtctt	ttgaagggtc	gatgaagcgt	480
tatccgaacg	acgagcaggc	ttttgacggt	ttcattatgg	cgcagcagct	tcccagaccg	540
ctggccttcg	agttttgcagc	gatgaatcgg	ggcgacgtta	cccgcgatcc	ggtcaaattg	600
ggcgaacgct	attatctgtt	caaactcagc	gaggtcggga	aaaacccccg	cgcgcagcct	660
ttcgagttgg	tcagaaacca	gttgaacaa	ggtttgagac	aggaaaaagc	ccgcttgaaa	720
atcgatgcca	ttttggaaga	aaacggtgct	aaaccgtaa			759

&lt;210&gt; 300

&lt;211&gt; 252

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 300

Met Lys Gln Lys Lys Thr Ala Ala Ala Val Ile Ala Ala Met Leu Ala  
1 5 10 15

Gly Phe Ala Ala Ala Lys Ala Pro Glu Ile Asp Pro Ala Leu Val Asp  
20 25 30

Thr Leu Val Ala Gln Ile Met Gln Gln Ala Asp Arg His Ala Glu Gln



35

40

45

Ser Gln Lys Pro Asp Gly Gln Ala Ile Arg Asn Asp Ala Val Arg Arg  
50 55 60

Leu Gln Thr Leu Glu Val Leu Lys Asn Arg Ala Leu Lys Glu Gly Leu  
65 70 75 80

Asp Lys Asp Lys Asp Val Gln Asn Arg Phe Lys Ile Ala Glu Ala Ser  
85 90 95

Phe Tyr Ala Glu Glu Tyr Val Arg Phe Leu Glu Arg Ser Glu Thr Val  
100 105 110

Ser Glu Ser Ala Leu Arg Gln Phe Tyr Glu Arg Gln Ile Arg Met Ile  
115 120 125

Lys Leu Gln Gln Val Ser Phe Ala Thr Glu Glu Glu Ala Arg Gln Ala  
130 135 140

Gln Gln Leu Leu Leu Lys Gly Leu Ser Phe Glu Gly Leu Met Lys Arg  
145 150 155 160

Tyr Pro Asn Asp Glu Gln Ala Phe Asp Gly Phe Ile Met Ala Gln Gln  
165 170 175

Leu Pro Glu Pro Leu Ala Ser Gln Phe Ala Ala Met Asn Arg Gly Asp  
180 185 190

Val Thr Arg Asp Pro Val Lys Leu Gly Glu Arg Tyr Tyr Leu Phe Lys  
195 200 205

Leu Ser Glu Val Gly Lys Asn Pro Asp Ala Gln Pro Phe Glu Leu Val  
210 215 220

Arg Asn Gln Leu Glu Gln Gly Leu Arg Gln Glu Lys Ala Arg Leu Lys  
225 230 235 240

Ile Asp Ala Ile Leu Glu Glu Asn Gly Val Lys Pro  
245 250

<210> 301

<211> 759

<212> DNA

<213> Neisseria gonorrhoeae

<400> 301

atgaaacaga	aaaagaccgc	tgccgcagtt	attgctgcaa	tggtggcagg	ttttgctggc	60
gccaagcac	ccgaaatcga	cccggctttg	gtggatacgc	tggtggcgca	gatcatgcag	120
caggcagacc	ggcatgcgga	gcagtcacca	agaccggacg	ggcaggcaat	ccgaaacgat	180
gccgtccgcc	ggctgcaaac	tttggaagtt	ttgaaaaaca	gggcattgaa	ggaaggtttg	240
gataaggata	aggatgtcca	aaaccgcttt	aaaatcgccg	aagcgtcttt	ttatgccgag	300
gagtacgtcc	gttttctgga	acgttcggaa	acggtttccg	aaagcgcact	gcgtcagttt	360
tatgagcggc	aaatccgcgt	gatcaaattg	cagcaggtca	gcttcgcaac	cgaagaggag	420
gcgcgtcagg	cgcagcagct	cctgctcaaa	gggctgtctt	ttgaagggtt	gatgaagcgt	480
tatccgaacg	acgagcaggc	gttcgacggt	ttcattatgg	cgcagcagct	tcccagaccg	540

ctggcttcgc	agtttgccgg	tatgaaccgt	ggcgacgtta	cccgcaatcc	ggtcaaattg	600
ggcgaacgct	attacctgtt	caaactcggc	gcggtcggga	aaaaccccga	cgcgcacgct	660
ttcgagttgg	tcagaaacca	gttggaacaa	ggtttgaggc	aggaaaaaagc	ccgcttgaaa	720
atcgatgccc	ttttggaaga	aaacggtgtc	aaaccgtaa			759

<210> 302  
 <211> 252  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 302

Met	Lys	Gln	Lys	Lys	Thr	Ala	Ala	Ala	Ala	Val	Ile	Ala	Ala	Met	Leu	Ala
1				5						10					15	
Gly	Phe	Ala	Ala	Ala	Lys	Ala	Pro	Glu	Ile	Asp	Pro	Ala	Leu	Val	Asp	
		20						25					30			
Thr	Leu	Val	Ala	Gln	Ile	Met	Gln	Gln	Ala	Asp	Arg	His	Ala	Glu	Gln	
		35					40					45				
Ser	Gln	Arg	Pro	Asp	Gly	Gln	Ala	Ile	Arg	Asn	Asp	Ala	Val	Arg	Arg	
	50					55					60					
Leu	Gln	Thr	Leu	Glu	Val	Leu	Lys	Asn	Arg	Ala	Leu	Lys	Glu	Gly	Leu	
65				70					75					80		
Asp	Lys	Asp	Lys	Asp	Val	Gln	Asn	Arg	Phe	Lys	Ile	Ala	Glu	Ala	Ser	
			85					90						95		
Phe	Tyr	Ala	Glu	Glu	Tyr	Val	Arg	Phe	Leu	Glu	Arg	Ser	Glu	Thr	Val	
		100						105					110			
Ser	Glu	Ser	Ala	Leu	Arg	Gln	Phe	Tyr	Glu	Arg	Gln	Ile	Arg	Met	Ile	
	115					120						125				
Lys	Leu	Gln	Gln	Val	Ser	Phe	Ala	Thr	Glu	Glu	Glu	Ala	Arg	Gln	Ala	
	130					135					140					
Gln	Gln	Leu	Leu	Leu	Lys	Gly	Leu	Ser	Phe	Glu	Gly	Leu	Met	Lys	Arg	
145					150					155				160		
Tyr	Pro	Asn	Asp	Glu	Gln	Ala	Phe	Asp	Gly	Phe	Ile	Met	Ala	Gln	Gln	
			165						170					175		
Leu	Pro	Glu	Pro	Leu	Ala	Ser	Gln	Phe	Ala	Gly	Met	Asn	Arg	Gly	Asp	
		180						185					190			
Val	Thr	Arg	Asn	Pro	Val	Lys	Leu	Gly	Glu	Arg	Tyr	Tyr	Leu	Phe	Lys	
		195					200					205				
Leu	Gly	Ala	Val	Gly	Lys	Asn	Pro	Asp	Ala	Gln	Pro	Phe	Glu	Leu	Val	
	210					215					220					
Arg	Asn	Gln	Leu	Glu	Gln	Gly	Leu	Arg	Gln	Glu	Lys	Ala	Arg	Leu	Lys	
225					230					235				240		

Ile Asp Ala Leu Leu Glu Glu Asn Gly Val Lys Pro  
 245 250

<210> 303  
 <211> 622  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 303  
 atgaaaaaat ctttccttac gcttggtctg tattcgtctt tacttaccgc cagcgaaatt 60  
 gccttaccctt ttggaattgg ggattgaaac cttaccggcg gcaaaaattg cggaaacgtt 120  
 tgcgctgaca tttgtgattg ctgcgctgta tctgtttgcg cgtaataagg tgacgcgttt 180  
 gttgattgcg gtgttttttg cgttcagcat tattgccaac aatgtgcatt acgcggatta 240  
 tcaaagctgg atgacgcaaa ccgtattcga gcagctgcaa aagactcctg acggcaactg 300  
 gctgtttgcc tatacctccg atcatggcca gtatgttcgc caagatatct acaatcaagg 360  
 cacggtgcag cccgacagct atctcgtgcc gctagtgttg tacagcccg ataaggccgt 420  
 gcaacaggct gccaaccagg cttttgcgcc ttgcgagatt gccttccatc agcagctttc 480  
 aacgttcctg attcacacgt tgggctacga tatgccggtt tcaggttgtc gcgaaggctc 540  
 ggtaacgggc aacctgatta cgggtgatgc aggcagcttg aacattcgcg acggcaaggc 600  
 ggaatatgtt tatccgcaat ga 622

<210> 304  
 <211> 206  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 304  
 Met Lys Lys Ser Phe Leu Thr Leu Val Leu Tyr Ser Ser Leu Leu Thr  
 1 5 10 15  
 Ala Ser Glu Ile Ala Tyr Pro Leu Glu Leu Gly Ile Glu Thr Leu Pro  
 20 25 30  
 Ala Ala Lys Ile Ala Glu Thr Phe Ala Leu Thr Phe Val Ile Ala Ala  
 35 40 45  
 Leu Tyr Leu Phe Ala Arg Asn Lys Val Thr Arg Leu Leu Ile Ala Val  
 50 55 60  
 Phe Phe Ala Phe Ser Ile Ile Ala Asn Asn Val His Tyr Ala Asp Tyr  
 65 70 75 80  
 Gln Ser Trp Met Thr Gln Thr Val Phe Glu Gln Leu Gln Lys Thr Pro  
 85 90 95  
 Asp Gly Asn Trp Leu Phe Ala Tyr Thr Ser Asp His Gly Gln Tyr Val  
 100 105 110  
 Arg Gln Asp Ile Tyr Asn Gln Gly Thr Val Gln Pro Asp Ser Tyr Leu  
 115 120 125  
 Val Pro Leu Val Leu Tyr Ser Pro Asp Lys Ala Val Gln Gln Ala Ala  
 130 135 140  
 Asn Gln Ala Phe Ala Pro Cys Glu Ile Ala Phe His Gln Gln Leu Ser  
 145 150 155 160

Thr Phe Leu Ile His Thr Leu Gly Tyr Asp Met Pro Val Ser Gly Cys  
165 170 175

Arg Glu Gly Ser Val Thr Gly Asn Leu Ile Thr Gly Asp Ala Gly Ser  
180 185 190

Leu Asn Ile Arg Asp Gly Lys Ala Glu Tyr Val Tyr Pro Gln  
195 200 205

<210> 305  
<211> 1575  
<212> DNA  
<213> Neisseria meningitidis

<400> 305  
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gcctatcgct ttgtatttgg gattgaaacc ttaccggcgg caaaaattgc ggaaacgttt 120  
gcgctgacat ttgtgattgc tgcgctgtat ctggttgccg gttataagg gacgcgtttg 180  
ttgattgcgg tggtttttgc gttcagcatt attgccaaca atgtgcatta cgcggtttat 240  
caaagctgga tgacgggcat caattattgg ctgatgctga aagaggttac cgaagtcggc 300  
agcgcgggtg cgtcgatgtt ggataagttg tggtgcctg tgttggtggg cgtgttgtaa 360  
gtcatgttgt tttgcagcct tgccaagtcc cgcgctaaga cgcatttttc tgccgatata 420  
ctggttgcc tctaatgct gatgattttc gtgcgttcgt tcgacacgaa acaagagcac 480  
ggtatttcgc ccaaaccgac atacagccgc atcaaagcca attatttcag cttcggttat 540  
tttgctggac gcgtgttgcc gtatcagttg tttgatttaa gcaggattcc cgcctttaag 600  
cagcctgctc caagcaaaat cgggcagggc agtggtcaaa atatcgctct gattatgggc 660  
gaaagcgaaa gcgcggcgca tttgaagctg tttggctacg gacgcgaaac ttcgccgttt 720  
ttaaccggc tgtcgcaagc cgattttaag ccgattgtga aacaaagtta ttcgcaggc 780  
tttatgactg cagtgtccct gccagtttt ttcaatgcga taccgcacgc caacggcttg 840  
gaacaaatca gcggcgggca taccaatatg ttccgcctcg ccaaagagca gggctatgaa 900  
acgtattttt acagcgcgca ggcggaaaac gagatggcga ttttgaactt aatcggttag 960  
aaatggatag accatctgat tcagccgacg caacttggct acggcaacgg cgacaatatg 1020  
cccgatgaga agctgctgcc gttgttcgac aaaatcaatt tgcagcaggg caagcatttt 1080  
atcgtgttgc accaacgcgg ttgcacgccc ccatacggcg cattgttgca gcctcaagat 1140  
aaagtattcg gcgaagccga tattgtggat aagtacgaca acaccatcca caaaaccgac 1200  
caaatgattc aaaccgtatt cgagcagctg caaaagcagc ctgacggcaa ctggctgttt 1260  
gcctatacct ccgatactgg ccagtatgtt gcgcaagata tctacaatca aggcacgggtg 1320  
cagcccagca gctatctcgt gccgctagtg ttgtacagcc cggataaggc cgtgcaacag 1380  
gctgccaacc aggtttttgc gccttgcgag attgccttcc atcagcagct ttcaacgttc 1440  
ctgattcaca cgttgggcta cgatatgccg gtttcagggt gtcgcgaagg ctcggtaacg 1500  
ggcaacctga ttacgggtga tgcaggcagc ttgaacattc gcgacggcaa ggcggaatat 1560  
gtttatccgc aatga 1575

<210> 306  
<211> 524  
<212> PRT  
<213> Neisseria meningitidis

<400> 306  
Met Lys Lys Ser Phe Leu Thr Leu Val Leu Tyr Ser Ser Leu Leu Thr  
1 5 10 15

Ala Ser Glu Ile Ala Tyr Arg Phe Val Phe Gly Ile Glu Thr Leu Pro  
20 25 30

Ala Ala Lys Ile Ala Glu Thr Phe Ala Leu Thr Phe Val Ile Ala Ala

35

40

45

Leu	Tyr	Leu	Phe	Ala	Arg	Tyr	Lys	Val	Thr	Arg	Leu	Leu	Ile	Ala	Val
50						55					60				
Phe	Phe	Ala	Phe	Ser	Ile	Ile	Ala	Asn	Asn	Val	His	Tyr	Ala	Val	Tyr
65				70						75					80
Gln	Ser	Trp	Met	Thr	Gly	Ile	Asn	Tyr	Trp	Leu	Met	Leu	Lys	Glu	Val
				85					90					95	
Thr	Glu	Val	Gly	Ser	Ala	Gly	Ala	Ser	Met	Leu	Asp	Lys	Leu	Trp	Leu
			100					105					110		
Pro	Val	Leu	Trp	Gly	Val	Leu	Glu	Val	Met	Leu	Phe	Cys	Ser	Leu	Ala
		115					120					125			
Lys	Phe	Arg	Arg	Lys	Thr	His	Phe	Ser	Ala	Asp	Ile	Leu	Phe	Ala	Phe
130						135					140				
Leu	Met	Leu	Met	Ile	Phe	Val	Arg	Ser	Phe	Asp	Thr	Lys	Gln	Glu	His
145				150						155					160
Gly	Ile	Ser	Pro	Lys	Pro	Thr	Tyr	Ser	Arg	Ile	Lys	Ala	Asn	Tyr	Phe
				165					170					175	
Ser	Phe	Gly	Tyr	Phe	Val	Gly	Arg	Val	Leu	Pro	Tyr	Gln	Leu	Phe	Asp
			180					185					190		
Leu	Ser	Arg	Ile	Pro	Ala	Phe	Lys	Gln	Pro	Ala	Pro	Ser	Lys	Ile	Gly
		195					200					205			
Gln	Gly	Ser	Val	Gln	Asn	Ile	Val	Leu	Ile	Met	Gly	Glu	Ser	Glu	Ser
	210					215					220				
Ala	Ala	His	Leu	Lys	Leu	Phe	Gly	Tyr	Gly	Arg	Glu	Thr	Ser	Pro	Phe
225					230					235					240
Leu	Thr	Arg	Leu	Ser	Gln	Ala	Asp	Phe	Lys	Pro	Ile	Val	Lys	Gln	Ser
				245					250					255	
Tyr	Ser	Ala	Gly	Phe	Met	Thr	Ala	Val	Ser	Leu	Pro	Ser	Phe	Phe	Asn
			260					265					270		
Ala	Ile	Pro	His	Ala	Asn	Gly	Leu	Glu	Gln	Ile	Ser	Gly	Gly	Asp	Thr
	275						280					285			
Asn	Met	Phe	Arg	Leu	Ala	Lys	Glu	Gln	Gly	Tyr	Glu	Thr	Tyr	Phe	Tyr
290						295					300				
Ser	Ala	Gln	Ala	Glu	Asn	Glu	Met	Ala	Ile	Leu	Asn	Leu	Ile	Gly	Lys
305					310					315					320
Lys	Trp	Ile	Asp	His	Leu	Ile	Gln	Pro	Thr	Gln	Leu	Gly	Tyr	Gly	Asn
				325					330					335	

Gly Asp Asn Met Pro Asp Glu Lys Leu Leu Pro Leu Phe Asp Lys Ile  
 340 345 350  
 Asn Leu Gln Gln Gly Lys His Phe Ile Val Leu His Gln Arg Gly Ser  
 355 360 365  
 His Ala Pro Tyr Gly Ala Leu Leu Gln Pro Gln Asp Lys Val Phe Gly  
 370 375 380  
 Glu Ala Asp Ile Val Asp Lys Tyr Asp Asn Thr Ile His Lys Thr Asp  
 385 390 395 400  
 Gln Met Ile Gln Thr Val Phe Glu Gln Leu Gln Lys Gln Pro Asp Gly  
 405 410 415  
 Asn Trp Leu Phe Ala Tyr Thr Ser Asp His Gly Gln Tyr Val Arg Gln  
 420 425 430  
 Asp Ile Tyr Asn Gln Gly Thr Val Gln Pro Asp Ser Tyr Leu Val Pro  
 435 440 445  
 Leu Val Leu Tyr Ser Pro Asp Lys Ala Val Gln Gln Ala Ala Asn Gln  
 450 455 460  
 Ala Phe Ala Pro Cys Glu Ile Ala Phe His Gln Leu Ser Thr Phe  
 465 470 475 480  
 Leu Ile His Thr Leu Gly Tyr Asp Met Pro Val Ser Gly Cys Arg Glu  
 485 490 495  
 Gly Ser Val Thr Gly Asn Leu Ile Thr Gly Asp Ala Gly Ser Leu Asn  
 500 505 510  
 Ile Arg Asp Gly Lys Ala Glu Tyr Val Tyr Pro Gln  
 515 520

<210> 307  
 <211> 1275  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 307  
 atgaaaaaat ccctttttcgt tctcttttctg tattcgctccc tacttactgc cagcgaaatt 60  
 gcttatcgct ttgtattcgg aattgaaacc ttaccggctg caaaaatggc agaaacgttt 120  
 gcgctgacat ttgtgattgc tgcgctgtat ctgtttgcgc gttataaggc aacgcgtttg 180  
 ttgattgcgg tgtttttcgc gttcagcatt attgccaca atgtgcatta cgcggtttat 240  
 caaagctgga taacgggcat taattattgg ctgatgctga aagagattac cgaagttggc 300  
 ggcgcagggg cgtcgatgtt ggataagttg tggctgcctg cgttgtggg cgtgttgga 360  
 gtcattgttg tttgcagcct tgccaagtcc cgccgtaaga cgcatttttc tgccgatata 420  
 ctgtttgcct tcctaattgct gatgattttc gtgcgttcgt tcgacacgaa acaagaacac 480  
 ggtatttcgc ccaaaccgac atacagccgc atcaaagcca attatttcag cttcggttat 540  
 tttgtcggac gcgtgttgcc gtatcagttg tttgatttaa gcaagattcc tgtgttcaaa 600  
 cagcctgctc caagcagaat cgggcaaggc agtattcaaa atatcgtcct gattatgggc 660  
 gaaagcgaaa gcgcggcgca tttgaaattg tttggctacg ggcgcgaaac ttcgccggtt 720  
 ttgaccagc tttcgcaagc cgatttttaag ccgattgtga aacaaagtta ttccgcaggc 780  
 tttatgacgg cagtatccct gccagtttc tttaacgtca taccgcatgc caacggcttg 840

gaacaaatca	gcggcggcga	tattgtggat	aagtagcaca	acaccatcca	caaaaccgac	900
caaatgattc	aaaccgtatt	cgagcagctg	caaaagcagc	ctgacggcaa	ctggctgttt	960
gcctatacct	ccgatcatgg	ccagtatggt	cgccaagata	tctacaatca	aggcacggtg	1020
cagccccgaca	gctatctcgt	gccgctgggt	ttgtacagcc	cggataaggc	cgtgcaacag	1080
gctgccaacc	aggcttttgc	gccttgcgag	attgccttcc	atcagcagct	ttcaacgttc	1140
ctgattcaca	cgttgggcta	cgatatgccg	gtttcagggt	gtcgcgagg	ctcggtaacg	1200
ggcaacctga	ttacgggtga	tgcaggcagc	ttgaacattc	gcgacggcaa	ggcggaatat	1260
gtttatccgc	aatga					1275

<210> 308  
 <211> 424  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 308

Met	Lys	Lys	Ser	Leu	Phe	Val	Leu	Phe	Leu	Tyr	Ser	Ser	Leu	Leu	Thr
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Ala	Ser	Glu	Ile	Ala	Tyr	Arg	Phe	Val	Phe	Gly	Ile	Glu	Thr	Leu	Pro
		20					25						30		
Ala	Ala	Lys	Met	Ala	Glu	Thr	Phe	Ala	Leu	Thr	Phe	Val	Ile	Ala	Ala
		35					40					45			
Leu	Tyr	Leu	Phe	Ala	Arg	Tyr	Lys	Ala	Thr	Arg	Leu	Leu	Ile	Ala	Val
	50					55				60					
Phe	Phe	Ala	Phe	Ser	Ile	Ile	Ala	Asn	Asn	Val	His	Tyr	Ala	Val	Tyr
65					70				75					80	
Gln	Ser	Trp	Ile	Thr	Gly	Ile	Asn	Tyr	Trp	Leu	Met	Leu	Lys	Glu	Ile
			85						90					95	
Thr	Glu	Val	Gly	Gly	Ala	Gly	Ala	Ser	Met	Leu	Asp	Lys	Leu	Trp	Leu
		100						105					110		
Pro	Ala	Leu	Trp	Gly	Val	Leu	Glu	Val	Met	Leu	Phe	Cys	Ser	Leu	Ala
		115				120						125			
Lys	Phe	Arg	Arg	Lys	Thr	His	Phe	Ser	Ala	Asp	Ile	Leu	Phe	Ala	Phe
	130					135					140				
Leu	Met	Leu	Met	Ile	Phe	Val	Arg	Ser	Phe	Asp	Thr	Lys	Gln	Glu	His
145				150						155				160	
Gly	Ile	Ser	Pro	Lys	Pro	Thr	Tyr	Ser	Arg	Ile	Lys	Ala	Asn	Tyr	Phe
			165						170					175	
Ser	Phe	Gly	Tyr	Phe	Val	Gly	Arg	Val	Leu	Pro	Tyr	Gln	Leu	Phe	Asp
		180						185					190		
Leu	Ser	Lys	Ile	Pro	Val	Phe	Lys	Gln	Pro	Ala	Pro	Ser	Arg	Ile	Gly
		195					200					205			
Gln	Gly	Ser	Ile	Gln	Asn	Ile	Val	Leu	Ile	Met	Gly	Glu	Ser	Glu	Ser
	210					215					220				

Ala Ala His Leu Lys Leu Phe Gly Tyr Gly Arg Glu Thr Ser Pro Phe  
 225 230 235 240  
 Leu Thr Gln Leu Ser Gln Ala Asp Phe Lys Pro Ile Val Lys Gln Ser  
 245 250 255  
 Tyr Ser Ala Gly Phe Met Thr Ala Val Ser Leu Pro Ser Phe Phe Asn  
 260 265 270  
 Val Ile Pro His Ala Asn Gly Leu Glu Gln Ile Ser Gly Gly Asp Ile  
 275 280 285  
 Val Asp Lys Tyr Asp Asn Thr Ile His Lys Thr Asp Gln Met Ile Gln  
 290 295 300  
 Thr Val Phe Glu Gln Leu Gln Lys Gln Pro Asp Gly Asn Trp Leu Phe  
 305 310 315 320  
 Ala Tyr Thr Ser Asp His Gly Gln Tyr Val Arg Gln Asp Ile Tyr Asn  
 325 330 335  
 Gln Gly Thr Val Gln Pro Asp Ser Tyr Leu Val Pro Leu Val Leu Tyr  
 340 345 350  
 Ser Pro Asp Lys Ala Val Gln Gln Ala Ala Asn Gln Ala Phe Ala Pro  
 355 360 365  
 Cys Glu Ile Ala Phe His Gln Gln Leu Ser Thr Phe Leu Ile His Thr  
 370 375 380  
 Leu Gly Tyr Asp Met Pro Val Ser Gly Cys Arg Glu Gly Ser Val Thr  
 385 390 395 400  
 Gly Asn Leu Ile Thr Gly Asp Ala Gly Ser Leu Asn Ile Arg Asp Gly  
 405 410 415  
 Lys Ala Glu Tyr Val Tyr Pro Gln  
 420

<210> 309  
 <211> 1575  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 309  
 atgaaaaaat cccttttcgt tctctttctg tattcatccc tacttaccgc cagcgaaatc 60  
 gcctatcgct ttgtattcgg aattgaaacc ttaccggctg caaaaatggc ggaaacgttt 120  
 gcgctgacat ttatgattgc tgcgctgtat ctgtttgcgc gttataaggc ttcgcggctg 180  
 ctgattgcgg tggttttcgc gttcagcatg attgccaaaca atgtgcatta cgcggtttat 240  
 caaagctgga tgacgggtat taactattgg ctgatgctga aagaggttac cgaagtcggc 300  
 agcgcgggcg cgctgatgtt ggataagttg tggctgcctg ctttgtgggg cgtggcggaa 360  
 gtcattgtgt tttgcagcct tgccaagttc cgccgtaaga cgcatttttc tgccgatata 420  
 ctgtttgcct tcctaattgct gatgattttc gtgcgttcgt tcgacacgaa acaagagcac 480  
 ggtatttcgc ccaaaccgac atacagccgc atcaaagcca attatttcag cttcggttat 540  
 tttgtcgggc gcgtgttgcc gtatcagttg tttgatttaa gcaagatccc tgtgttcaaa 600  
 cagcctgctc caagcaaaat cgggcaaggc agtattcaaa atatcgtcct gattatgggc 660



gaaagcgaaa	gcgcggcgca	tttgaaattg	tttggttacg	ggcgcgaaac	ttcgccgttt	720
ttaacccggc	tgtcgcaagc	cgattttaag	ccgattgtga	aacaaagtta	ttccgcaggc	780
tttatgacgg	cagtatccct	gcccagtttc	tttaacgtca	taccgcacgc	caacggcttg	840
gaacaaatca	gcgcggcgca	taccaatatg	ttccgcctcg	ccaaagagca	gggctatgaa	900
acgtatTTTT	acagtgccca	ggctgaaaac	caaattggcaa	ttttgaactt	aatcggttaag	960
aaatggatag	accatctgat	tcagccgacg	caacttggtc	acggcaacgg	cgacaatatg	1020
cccgatgaga	agctgctgcc	gttggttcgac	aaaatcaatt	tgcagcaggg	caggcatttt	1080
atcgtgttgc	accaacgcgg	ttcgacgcgc	ccatacggcg	cattgttgca	gcctcaagat	1140
aaagtattcg	gcgaagccga	tattgtggat	aagtacgaca	acaccatcca	caaaaccgac	1200
caaattgattc	aaaccgtatt	cgagcagctg	caaaagcagc	ctgacggcaa	ctggctgttt	1260
gcctatacct	ccgatcatgg	ccagtatgtg	cgccaagata	tctacaatca	aggcacgggtg	1320
cagcccgaca	gctatattgt	gcctctgggt	ttgtacagcc	cggataaggc	cgtgcaacag	1380
gctgccaacc	aggcttttgc	gccttgcgag	attgccttcc	atcagcagct	ttcaacgttc	1440
ctgattcaca	cgttgggcta	cgatatgccg	gtttcagggt	gtcgcgaagg	ctcggtaaca	1500
ggcaacctga	ttacgggcga	tgcaggcagc	ttgaacattc	gcaacggcaa	ggcggaatat	1560
gtttatccgc	aataa					1575

<210> 310  
 <211> 524  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 310

Met	Lys	Lys	Ser	Leu	Phe	Val	Leu	Phe	Leu	Tyr	Ser	Ser	Leu	Leu	Thr
1			5					10						15	
Ala	Ser	Glu	Ile	Ala	Tyr	Arg	Phe	Val	Phe	Gly	Ile	Glu	Thr	Leu	Pro
			20					25						30	
Ala	Ala	Lys	Met	Ala	Glu	Thr	Phe	Ala	Leu	Thr	Phe	Met	Ile	Ala	Ala
		35					40					45			
Leu	Tyr	Leu	Phe	Ala	Arg	Tyr	Lys	Ala	Ser	Arg	Leu	Leu	Ile	Ala	Val
	50					55					60				
Phe	Phe	Ala	Phe	Ser	Met	Ile	Ala	Asn	Asn	Val	His	Tyr	Ala	Val	Tyr
65					70					75				80	
Gln	Ser	Trp	Met	Thr	Gly	Ile	Asn	Tyr	Trp	Leu	Met	Leu	Lys	Glu	Val
				85					90					95	
Thr	Glu	Val	Gly	Ser	Ala	Gly	Ala	Ser	Met	Leu	Asp	Lys	Leu	Trp	Leu
		100						105					110		
Pro	Ala	Leu	Trp	Gly	Val	Ala	Glu	Val	Met	Leu	Phe	Cys	Ser	Leu	Ala
		115					120					125			
Lys	Phe	Arg	Arg	Lys	Thr	His	Phe	Ser	Ala	Asp	Ile	Leu	Phe	Ala	Phe
	130					135					140				
Leu	Met	Leu	Met	Ile	Phe	Val	Arg	Ser	Phe	Asp	Thr	Lys	Gln	Glu	His
145				150						155				160	
Gly	Ile	Ser	Pro	Lys	Pro	Thr	Tyr	Ser	Arg	Ile	Lys	Ala	Asn	Tyr	Phe
				165					170					175	

Ser Phe Gly Tyr Phe Val Gly Arg Val Leu Pro Tyr Gln Leu Phe Asp	180	185	190
Leu Ser Lys Ile Pro Val Phe Lys Gln Pro Ala Pro Ser Lys Ile Gly	195	200	205
Gln Gly Ser Ile Gln Asn Ile Val Leu Ile Met Gly Glu Ser Glu Ser	210	215	220
Ala Ala His Leu Lys Leu Phe Gly Tyr Gly Arg Glu Thr Ser Pro Phe	225	230	235
Leu Thr Arg Leu Ser Gln Ala Asp Phe Lys Pro Ile Val Lys Gln Ser	245	250	255
Tyr Ser Ala Gly Phe Met Thr Ala Val Ser Leu Pro Ser Phe Phe Asn	260	265	270
Val Ile Pro His Ala Asn Gly Leu Glu Gln Ile Ser Gly Gly Asp Thr	275	280	285
Asn Met Phe Arg Leu Ala Lys Glu Gln Gly Tyr Glu Thr Tyr Phe Tyr	290	295	300
Ser Ala Gln Ala Glu Asn Gln Met Ala Ile Leu Asn Leu Ile Gly Lys	305	310	315
Lys Trp Ile Asp His Leu Ile Gln Pro Thr Gln Leu Gly Tyr Gly Asn	325	330	335
Gly Asp Asn Met Pro Asp Glu Lys Leu Leu Pro Leu Phe Asp Lys Ile	340	345	350
Asn Leu Gln Gln Gly Arg His Phe Ile Val Leu His Gln Arg Gly Ser	355	360	365
His Ala Pro Tyr Gly Ala Leu Leu Gln Pro Gln Asp Lys Val Phe Gly	370	375	380
Glu Ala Asp Ile Val Asp Lys Tyr Asp Asn Thr Ile His Lys Thr Asp	385	390	395
Gln Met Ile Gln Thr Val Phe Glu Gln Leu Gln Lys Gln Pro Asp Gly	405	410	415
Asn Trp Leu Phe Ala Tyr Thr Ser Asp His Gly Gln Tyr Val Arg Gln	420	425	430
Asp Ile Tyr Asn Gln Gly Thr Val Gln Pro Asp Ser Tyr Ile Val Pro	435	440	445
Leu Val Leu Tyr Ser Pro Asp Lys Ala Val Gln Gln Ala Ala Asn Gln	450	455	460
Ala Phe Ala Pro Cys Glu Ile Ala Phe His Gln Gln Leu Ser Thr Phe	465	470	475
			480

Leu Ile His Thr Leu Gly Tyr Asp Met Pro Val Ser Gly Cys Arg Glu  
 485 490 495

Gly Ser Val Thr Gly Asn Leu Ile Thr Gly Asp Ala Gly Ser Leu Asn  
 500 505 510

Ile Arg Asn Gly Lys Ala Glu Tyr Val Tyr Pro Gln  
 515 520

<210> 311  
 <211> 590  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 311  
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 cccacggcgg cggcaaaccg tttgccgtcg aacaagaact cgtcgccgca tcgtcccgcg 120  
 ccgccgtcaa agaaatggat ttgtccgccc taaaaggacg caaagccgcc ytttacgtct 180  
 ccgttatggg cgaccaaggt tcgggcaaca taagcggcgg acgtactct atcgacgcac 240  
 tgatacgagg cggctaccac aacaaccccg aaagtgccac ccaatacagc taccgcgct 300  
 acgacactac cgccaccacc aaatccgacg cgtctctccag cgtaaccact tccacatcgc 360  
 ttttgaacgc ccccgccggc gycytgacga aaaacagcgg acgcaaaggc gaacgctccg 420  
 ccggactgtc cgtcaacggc acgggagact accgcaacga aaccctgctc gcccaaccccc 480  
 ggcaggttcc cttcctgacc aacctcatcc aaaccgtctt ctacctgcgc ggcacgaag 540  
 tcgtaccggc cgratacgcc gacaccgacg tattcgtaac cgtcgacgta 590

<210> 312  
 <211> 197  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (12)..(12)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (58)..(58)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (128)..(128)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (185)..(185)  
 <223> Xaa= any amino acid

<400> 312  
 Thr Leu Leu Leu Phe Ile Pro Leu Val Leu Thr Xaa Cys Gly Thr Leu  
 1 5 10 15

Thr Gly Ile Leu Ala His Gly Gly Gly Lys Arg Phe Ala Val Glu Gln

20

25

30

Glu Leu Val Ala Ala Ser Ser Arg Ala Ala Val Lys Glu Met Asp Leu  
35 40 45

Ser Ala Leu Lys Gly Arg Lys Ala Ala Xaa Tyr Val Ser Val Met Gly  
50 55 60

Asp Gln Gly Ser Gly Asn Ile Ser Gly Gly Arg Tyr Ser Ile Asp Ala  
65 70 75 80

Leu Ile Arg Gly Gly Tyr His Asn Asn Pro Glu Ser Ala Thr Gln Tyr  
85 90 95

Ser Tyr Pro Ala Tyr Asp Thr Thr Ala Thr Thr Lys Ser Asp Ala Leu  
100 105 110

Ser Ser Val Thr Thr Ser Thr Ser Leu Leu Asn Ala Pro Ala Ala Xaa  
115 120 125

Leu Thr Lys Asn Ser Gly Arg Lys Gly Glu Arg Ser Ala Gly Leu Ser  
130 135 140

Val Asn Gly Thr Gly Asp Tyr Arg Asn Glu Thr Leu Leu Ala Asn Pro  
145 150 155 160

Arg Asp Val Ser Phe Leu Thr Asn Leu Ile Gln Thr Val Phe Tyr Leu  
165 170 175

Arg Gly Ile Glu Val Val Pro Pro Xaa Tyr Ala Asp Thr Asp Val Phe  
180 185 190

Val Thr Val Asp Val  
195

<210> 313

<211> 942

<212> DNA

<213> Neisseria meningitidis

<400> 313

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tcccgcgccc	ccgtcaaaga	aatggatttg	tccgccctaa	aaggacgcaa	agccgcccctt	180
tacgtctccg	ttatggggcg	ccaagggttcg	ggcaacataa	gcggcgggacg	ctactctatc	240
gacgcactga	tacgcggcgg	ctaccacaac	aaccccgaaa	gtgccaccca	atacagctac	300
ccgcctacg	acactaccgc	caccacaaa	tccgacgcgc	tctccagcgt	aaccacttcc	360
acatcgcttt	tgaacgcccc	cgccgcccgc	ctgacgaaaa	acagcgggacg	caaaggcgaa	420
cgctccgccc	gactgtccgt	caacggcacg	ggcgactacc	gcaacgaaac	cctgctcgcc	480
aacccccgcg	acgtttcctt	cctgaccaac	ctcatccaaa	ccgtcttcta	cctgcgcggc	540
atcgaagtcg	taccgcccga	atacgcgcgac	accgacgtat	tcgtaaccgt	cgacgtattc	600
ggcaccgctc	gcagccgtac	cgaactgcac	ctctacaacg	ccgaaaccct	taaagcccaa	660
accaagctcg	aatatttcgc	cgttgaccgc	gacagccgga	aactgctgat	taccctctaaa	720
accgcccgcct	acgaatccca	ataccaagaa	caatacgccc	tttggaaccgg	cccttacaaa	780
gtcagcaaaa	ccgtcaaagc	ctcagaccgc	ctgatggctg	atttctccga	cattaccccc	840
tacggcgaca	caaccgcccc	aaaccgtccc	gacttcaaac	aaaacaacgg	taaaaaaccc	900

gatgtcggca acgaagtcac ccgccgccgc aaaggaggat aa

942

<210> 314

<211> 313

<212> PRT

<213> Neisseria meningitidis

<400> 314

Met	Lys	Thr	Leu	Leu	Leu	Ile	Pro	Leu	Val	Leu	Thr	Ala	Cys	Gly	
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Thr	Leu	Thr	Gly	Ile	Pro	Ala	His	Gly	Gly	Gly	Lys	Arg	Phe	Ala	Val
			20				25					30			
Glu	Gln	Glu	Leu	Val	Ala	Ala	Ser	Ser	Arg	Ala	Ala	Val	Lys	Glu	Met
		35					40					45			
Asp	Leu	Ser	Ala	Leu	Lys	Gly	Arg	Lys	Ala	Ala	Leu	Tyr	Val	Ser	Val
	50					55					60				
Met	Gly	Asp	Gln	Gly	Ser	Gly	Asn	Ile	Ser	Gly	Gly	Arg	Tyr	Ser	Ile
65					70					75					80
Asp	Ala	Leu	Ile	Arg	Gly	Gly	Tyr	His	Asn	Asn	Pro	Glu	Ser	Ala	Thr
			85						90					95	
Gln	Tyr	Ser	Tyr	Pro	Ala	Tyr	Asp	Thr	Thr	Ala	Thr	Thr	Lys	Ser	Asp
			100					105					110		
Ala	Leu	Ser	Ser	Val	Thr	Thr	Ser	Thr	Ser	Leu	Leu	Asn	Ala	Pro	Ala
		115					120					125			
Ala	Ala	Leu	Thr	Lys	Asn	Ser	Gly	Arg	Lys	Gly	Glu	Arg	Ser	Ala	Gly
	130						135				140				
Leu	Ser	Val	Asn	Gly	Thr	Gly	Asp	Tyr	Arg	Asn	Glu	Thr	Leu	Leu	Ala
145					150					155					160
Asn	Pro	Arg	Asp	Val	Ser	Phe	Leu	Thr	Asn	Leu	Ile	Gln	Thr	Val	Phe
			165					170						175	
Tyr	Leu	Arg	Gly	Ile	Glu	Val	Val	Pro	Pro	Glu	Tyr	Ala	Asp	Thr	Asp
			180					185					190		
Val	Phe	Val	Thr	Val	Asp	Val	Phe	Gly	Thr	Val	Arg	Ser	Arg	Thr	Glu
		195					200					205			
Leu	His	Leu	Tyr	Asn	Ala	Glu	Thr	Leu	Lys	Ala	Gln	Thr	Lys	Leu	Glu
	210					215					220				
Tyr	Phe	Ala	Val	Asp	Arg	Asp	Ser	Arg	Lys	Leu	Leu	Ile	Thr	Pro	Lys
225					230					235				240	
Thr	Ala	Ala	Tyr	Glu	Ser	Gln	Tyr	Gln	Glu	Gln	Tyr	Ala	Leu	Trp	Thr
			245					250						255	

Gly Pro Tyr Lys Val Ser Lys Thr Val Lys Ala Ser Asp Arg Leu Met  
 260 265 270

Val Asp Phe Ser Asp Ile Thr Pro Tyr Gly Asp Thr Thr Ala Gln Asn  
 275 280 285

Arg Pro Asp Phe Lys Gln Asn Asn Gly Lys Lys Pro Asp Val Gly Asn  
 290 295 300

Glu Val Ile Arg Arg Arg Lys Gly Gly  
 305 310

<210> 315  
 <211> 942  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> N= Unknown

<400> 315  
 atgaaaaccc tgctcntcct catccccctc gtccctcacag cctgcggcac actgaccggc 60  
 ataccgccc acggcgggcg caaacgcttt gccgtcgaac aagaactcgt cgccgcatcg 120  
 tcccgcgccg ccgtcaaaga aatggacttg tccgccctga aaggacgcaa agccgcccctt 180  
 tacgtctccg ttatggggcga ccaaggttcg ggcaacataa gcggcggaag ctactctatc 240  
 gagcactga tacgcggcggt ctaccacaac aaccccgaaa gtgccacca atacagctac 300  
 cccgcctacg acactaccgc caccaccaa tccgacgcgc tctccagcgt aaccacttcc 360  
 acatcgcttt tgaacgcccc cgccgcgcgc ctgacgaaaa acagcggacg caaaggcgaa 420  
 cgctccgccc gactgtccgt caacggcacg ggcgactacc gcaacgaaac cctgctcgcc 480  
 aacccccgcg acgtttcctt cctgaccaac ctcatccaaa ccgtcttcta cctgcgcggc 540  
 atcgaagtgc tacgcgccga atacgcgcgac accgacgtat tcgtaaccgt cgacgtattc 600  
 ggcaccgtcc gcagccgcac cgaactgcac ctctacaacg ccgaaaccct taaagcccaa 660  
 accaagctcg aatatttcgc cgttgaccgc gacagccgga aactgctgat tgcccctaaa 720  
 accgcccgcct acgaattcca ataccaagaa caatacgccc tctggatggg accttacagc 780  
 gtcggcaaaa ccgtcaaagc ctcagaccgc ctgatggtcg atttctccga catcaccccc 840  
 tacggcgaca caaccgcccc aaaccgtccc gacttcaaac aaaacaacgg taaaaaacc 900  
 gatgtcggca acgaagtcac ccgcgcgcgc aaaggaggat aa 942

<210> 316  
 <211> 313  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (6)..(6)  
 <223> Xaa= any amino acid

<400> 316  
 Met Lys Thr Leu Leu Xaa Leu Ile Pro Leu Val Leu Thr Ala Cys Gly  
 1 5 10 15  
 Thr Leu Thr Gly Ile Pro Ala His Gly Gly Gly Lys Arg Phe Ala Val  
 20 25 30

Glu	Gln	Glu	Leu	Val	Ala	Ala	Ser	Ser	Arg	Ala	Ala	Val	Lys	Glu	Met	35	40	45	
Asp	Leu	Ser	Ala	Leu	Lys	Gly	Arg	Lys	Ala	Ala	Leu	Tyr	Val	Ser	Val	50	55	60	
Met	Gly	Asp	Gln	Gly	Ser	Gly	Asn	Ile	Ser	Gly	Gly	Arg	Tyr	Ser	Ile	65	70	75	80
Asp	Ala	Leu	Ile	Arg	Gly	Gly	Tyr	His	Asn	Asn	Pro	Glu	Ser	Ala	Thr	85	90	95	
Gln	Tyr	Ser	Tyr	Pro	Ala	Tyr	Asp	Thr	Thr	Ala	Thr	Thr	Lys	Ser	Asp	100	105	110	
Ala	Leu	Ser	Ser	Val	Thr	Thr	Ser	Thr	Ser	Leu	Leu	Asn	Ala	Pro	Ala	115	120	125	
Ala	Ala	Leu	Thr	Lys	Asn	Ser	Gly	Arg	Lys	Gly	Glu	Arg	Ser	Ala	Gly	130	135	140	
Leu	Ser	Val	Asn	Gly	Thr	Gly	Asp	Tyr	Arg	Asn	Glu	Thr	Leu	Leu	Ala	145	150	155	160
Asn	Pro	Arg	Asp	Val	Ser	Phe	Leu	Thr	Asn	Leu	Ile	Gln	Thr	Val	Phe	165	170	175	
Tyr	Leu	Arg	Gly	Ile	Glu	Val	Val	Pro	Pro	Glu	Tyr	Ala	Asp	Thr	Asp	180	185	190	
Val	Phe	Val	Thr	Val	Asp	Val	Phe	Gly	Thr	Val	Arg	Ser	Arg	Thr	Glu	195	200	205	
Leu	His	Leu	Tyr	Asn	Ala	Glu	Thr	Leu	Lys	Ala	Gln	Thr	Lys	Leu	Glu	210	215	220	
Tyr	Phe	Ala	Val	Asp	Arg	Asp	Ser	Arg	Lys	Leu	Leu	Ile	Ala	Pro	Lys	225	230	235	240
Thr	Ala	Ala	Tyr	Glu	Ser	Gln	Tyr	Gln	Glu	Gln	Tyr	Ala	Leu	Trp	Met	245	250	255	
Gly	Pro	Tyr	Ser	Val	Gly	Lys	Thr	Val	Lys	Ala	Ser	Asp	Arg	Leu	Met	260	265	270	
Val	Asp	Phe	Ser	Asp	Ile	Thr	Pro	Tyr	Gly	Asp	Thr	Thr	Ala	Gln	Asn	275	280	285	
Arg	Pro	Asp	Phe	Lys	Gln	Asn	Asn	Gly	Lys	Lys	Pro	Asp	Val	Gly	Asn	290	295	300	
Glu	Val	Ile	Arg	Arg	Arg	Lys	Gly	Gly								305	310		
<210> 317																			
<211> 942																			

<212> DNA  
<213> Neisseria gonorrhoeae

<400> 317  
atgaaaaccc tgctcctcct catccccctc gtactcacgc cctgcggcac actgaccggc 60  
ataccgcccc acggcgggcg caaacgcttt gccgtcgaac aggaactcgt cgccgcatcg 120  
tcccgcgccg ccgtcaaaga aatggacttg tccgccttga aaggacgcaa agccgcccctt 180  
tacgtctccg ttatggggcga ccaagggttcg ggcaacataa gcggcggacg ctactccatc 240  
gacgcactga tacgcggcgg ctaccacaac aaccccgaca gcgccaccgc atacagctac 300  
cccgcctatg acaactaccgc caccacaaaa tccgacgcgc tctccggcgt aaccacttcc 360  
acatcgcttt tgaacgcccc cgccgcccgc ctgacgaaaa acaacggacg caaaggcgaa 420  
cgctccgccc gactgtccgt caacggcacg ggcgactacc gcaacgaaac cctgctcgcc 480  
aacccccgcg acgttttcctt cctgaccaac ctcatccaaa ccgtcttcta cctgcgcggc 540  
atcgaagtcg taccgcccga atacgccgac accgacgtat tcgtaaccgt cgacgtattc 600  
ggcaccgctc gcagccgtac cgaactgcac ctctacaacg ccgaaaccct taaagcccaa 660  
accaagctcg aatatttgcg cgtcgaccgc gacagccgga aactgctgat tgcccctaaa 720  
accgcccgtc acgaatccca ataccaagaa caatagccc tctggatggg accttacagc 780  
gtcggcaaaa ccgtcaaagc ctcagaccgc ctgatggtcg atttctccga catcaccccc 840  
tacggcgaca caaccgcccc aaaccgtccc gacttcaaac aaaacaacgg taaaaacccc 900  
gatgtcggca acgaagtcat ccgcccgcgc aaaggaggat aa 942

<210> 318  
<211> 313  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 318  
Met Lys Thr Leu Leu Leu Ile Pro Leu Val Leu Thr Ala Cys Gly  
1 5 10 15  
Thr Leu Thr Gly Ile Pro Ala His Gly Gly Gly Lys Arg Phe Ala Val  
20 25 30  
Glu Gln Glu Leu Val Ala Ala Ser Ser Arg Ala Ala Val Lys Glu Met  
35 40 45  
Asp Leu Ser Ala Leu Lys Gly Arg Lys Ala Ala Leu Tyr Val Ser Val  
50 55 60  
Met Gly Asp Gln Gly Ser Gly Asn Ile Ser Gly Gly Arg Tyr Ser Ile  
65 70 75 80  
Asp Ala Leu Ile Arg Gly Gly Tyr His Asn Asn Pro Asp Ser Ala Thr  
85 90 95  
Arg Tyr Ser Tyr Pro Ala Tyr Asp Thr Thr Ala Thr Thr Lys Ser Asp  
100 105 110  
Ala Leu Ser Gly Val Thr Thr Ser Thr Ser Leu Leu Asn Ala Pro Ala  
115 120 125  
Ala Ala Leu Thr Lys Asn Asn Gly Arg Lys Gly Glu Arg Ser Ala Gly  
130 135 140  
Leu Ser Val Asn Gly Thr Gly Asp Tyr Arg Asn Glu Thr Leu Leu Ala  
145 150 155 160



Asn Pro Arg Asp Val Ser Phe Leu Thr Asn Leu Ile Gln Thr Val Phe  
 165 170 175  
 Tyr Leu Arg Gly Ile Glu Val Val Pro Pro Glu Tyr Ala Asp Thr Asp  
 180 185 190  
 Val Phe Val Thr Val Asp Val Phe Gly Thr Val Arg Ser Arg Thr Glu  
 195 200 205  
 Leu His Leu Tyr Asn Ala Glu Thr Leu Lys Ala Gln Thr Lys Leu Glu  
 210 215 220  
 Tyr Phe Ala Val Asp Arg Asp Ser Arg Lys Leu Leu Ile Ala Pro Lys  
 225 230 235 240  
 Thr Ala Ala Tyr Glu Ser Gln Tyr Gln Glu Gln Tyr Ala Leu Trp Met  
 245 250 255  
 Gly Pro Tyr Ser Val Gly Lys Thr Val Lys Ala Ser Asp Arg Leu Met  
 260 265 270  
 Val Asp Phe Ser Asp Ile Thr Pro Tyr Gly Asp Thr Thr Ala Gln Asn  
 275 280 285  
 Arg Pro Asp Phe Lys Gln Asn Asn Gly Lys Asn Pro Asp Val Gly Asn  
 290 295 300  
 Glu Val Ile Arg Arg Arg Lys Gly Gly  
 305 310

<210> 319  
 <211> 1191  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 319  
 atggcagaga tctgtttgat aaccggcagc cccggttcag ggaaaacatt aaaaatgggt 60  
 tccatgatgg cgaatgatga aatgtttaag cctgatgaaa aagccatacg ccgtaaagta 120  
 ttaccgaaca taaaaggctt gaaaataccg cacacctaca tagaaacgga cgcaaaaaag 180  
 ctgccgaaat cgacagatga gcagctttcg gcgcatgata tgtacgaatg gataaagaag 240  
 cccgaaaata tcgggtctat tgtcattgta gatgaagctc aagacgtatg gccggcacgc 300  
 tcggcagggt caaaaatccc tgaaaatgtc caatggctga atacgcacag acatcagggc 360  
 attgatatat ttgttttgac tcaaggtcct aagcttctag atcaaaatct tagaacgctt 420  
 gtacggaaac attaccacat cgcttcaaac aagatgggta tgcgtacgct tttagaatgg 480  
 aaaatatgcy cggacgatcc cgtaaaaatg gcatcaagcg cattctccag tatctataca 540  
 ctggataaaa aagtttatga cttgtaysrr tmmgcggaag ttcataccgt aaataagggtc 600  
 aagcgggtcaa agtggtttta cactctgcca gtaatatgat tgctgattcc cgtgtttgtc 660  
 ggctgtcct ataaaatggt gagcagttac ggaaaaaac aggaagaacc cgcagcaca 720  
 gaatcggcgg caacagaaca gcaggcagta cttccggata aaacagaagg cgagccggta 780  
 aataacggca accttaccgc agatatgttt gttccgacat tgtccgaaaa acccggaagc 840  
 aagccgattt ataacggtgt aaggcaggta agaacccttg aatatatagc aggtgtata 900  
 gaaggcggaa gaaccggatg cgctgtctat tcgcatcaag ggacggcatt gaaagaagtg 960  
 acggagttaga tgtgccaaag actatgtaaa aaacggcttg ccgtttaacc catacaaaga 1020  
 agaaagccaa gggcaggaag ttcagcaaaag cgcgcagcaa cattcggaca gggcgccaag 1080  
 ttgccacatt gggcggaaaa ccgtagcaga acctaattgt cgataattgg gaagaacgcg 1140  
 ggaaaccgtt tgaaggaatc ggacgggggc gtggtcggat cggcaactg a 1191

<210> 320  
 <211> 395  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (190)..(191)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (279)..(279)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (368)..(368)  
 <223> Xaa= any amino acid

<400> 320  
 Met Ala Glu Ile Cys Leu Ile Thr Gly Thr Pro Gly Ser Gly Lys Thr  
 1 5 10 15  
 Leu Lys Met Val Ser Met Met Ala Asn Asp Glu Met Phe Lys Pro Asp  
 20 25 30  
 Glu Lys Ala Ile Arg Arg Lys Val Phe Thr Asn Ile Lys Gly Leu Lys  
 35 40 45  
 Ile Pro His Thr Tyr Ile Glu Thr Asp Ala Lys Lys Leu Pro Lys Ser  
 50 55 60  
 Thr Asp Glu Gln Leu Ser Ala His Asp Met Tyr Glu Trp Ile Lys Lys  
 65 70 75 80  
 Pro Glu Asn Ile Gly Ser Ile Val Ile Val Asp Glu Ala Gln Asp Val  
 85 90 95  
 Trp Pro Ala Arg Ser Ala Gly Ser Lys Ile Pro Glu Asn Val Gln Trp  
 100 105 110  
 Leu Asn Thr His Arg His Gln Gly Ile Asp Ile Phe Val Leu Thr Gln  
 115 120 125  
 Gly Pro Lys Leu Leu Asp Gln Asn Leu Arg Thr Leu Val Arg Lys His  
 130 135 140  
 Tyr His Ile Ala Ser Asn Lys Met Gly Met Arg Thr Leu Leu Glu Trp  
 145 150 155 160  
 Lys Ile Cys Ala Asp Asp Pro Val Lys Met Ala Ser Ser Ala Phe Ser  
 165 170 175  
 Ser Ile Tyr Thr Leu Asp Lys Lys Val Tyr Asp Leu Tyr Xaa Xaa Ala  
 180 185 190

Glu Val His Thr Val Asn Lys Val Lys Arg Ser Lys Trp Phe Tyr Thr  
 195 200 205  
 Leu Pro Val Ile Val Leu Leu Ile Pro Val Phe Val Gly Leu Ser Tyr  
 210 215 220  
 Lys Met Leu Ser Ser Tyr Gly Lys Lys Gln Glu Glu Pro Ala Ala Gln  
 225 230 235 240  
 Glu Ser Ala Ala Thr Glu Gln Gln Ala Val Leu Pro Asp Lys Thr Glu  
 245 250 255  
 Gly Glu Pro Val Asn Asn Gly Asn Leu Thr Ala Asp Met Phe Val Pro  
 260 265 270  
 Thr Leu Ser Glu Lys Pro Xaa Ser Lys Pro Ile Tyr Asn Gly Val Arg  
 275 280 285  
 Gln Val Arg Thr Phe Glu Tyr Ile Ala Gly Cys Ile Glu Gly Gly Arg  
 290 295 300  
 Thr Gly Cys Ala Cys Tyr Ser His Gln Gly Thr Ala Leu Lys Glu Val  
 305 310 315 320  
 Thr Glu Leu Met Cys Lys Asp Tyr Val Lys Asn Gly Leu Pro Phe Asn  
 325 330 335  
 Pro Tyr Lys Glu Glu Ser Gln Gly Gln Glu Val Gln Gln Ser Ala Gln  
 340 345 350  
 Gln His Ser Asp Arg Ala Gln Val Ala Thr Leu Gly Gly Lys Pro Xaa  
 355 360 365  
 Gln Asn Leu Met Tyr Asp Asn Trp Glu Glu Arg Gly Lys Pro Phe Glu  
 370 375 380  
 Gly Ile Gly Gly Gly Val Val Gly Ser Ala Asn  
 385 390 395

<210> 321  
 <211> 1188  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 321  
 atggcagaga tctgtttgat aaccggcacg cccggttcag ggaaaacatt aaaaatggtt 60  
 tccatgatgg cgaatgatga aatgtttaag cctgatgaaa acggcatagc ccgtaaagta 120  
 tttacgaaca taaaaggctt gaaaataaccg cacacctaca tagaaacgga cgcaaaaaag 180  
 ctgccgaaat cgacagatga gcagctttcg gcgcatgata tgtacgaatg gataaagaag 240  
 cccgaaaata tcgggtctat tgtcattgta gatgaagctc aagacgtatg gccggcacgc 300  
 tcggcagggt caaaaatccc tgaaaatgtc caatggctga atacgcacag acatcagggc 360  
 attgatatat ttgttttgac tcaaggtcct aagcttctag atcaaaatct tagaacgctt 420  
 gtacggaaac attaccacat cgcttcaaac aagatgggta tgcgtacgct tttagaatgg 480  
 aaaatatgcg cggacgatcc cgtaaaaatg gcatcaagcg cattctccag tatctataca 540  
 ctggataaaa aagtttatga cttgtacgaa tcagcggaag ttcataccgt aaataaggctc 600  
 aagcgggtcaa agtgggttta cactctgcc a gtaatagat tgctgattcc cgtgtttgtc 660

ggcctgtcct	ataaaatggt	gagcagttac	ggaaaaaaac	aggaagaacc	cgcagcacaa	720
gaatcggcgg	caacagaaca	gcaggcagta	cttccggata	aaacagaagg	cgagccggta	780
aataacggca	accttaccgc	agatatgttt	gttccgacat	tgtccgaaaa	acccgaaagc	840
aagccgattt	ataacgggtg	aaggcaggta	agaacctttg	aatatatagc	aggctgtata	900
gaaggcggaa	gaaccggatg	cgcttgctat	tcgcatcaag	ggacggcatt	gaaagaagtg	960
acggagttga	tgtgcaagga	ctatgtaaaa	aacggccttg	cgtttaaccc	atacaaagaa	1020
gaaagccaag	ggcaggaagt	tcagcaaagc	gcgcagcaac	attcggacag	ggcgcaagtt	1080
gccacattgg	gcggaaaacc	gtagcagaac	ctaattgtac	ataattggga	agaacgcggg	1140
aaaccgtttg	aaggaatcgg	cgggggctg	gtcggatcgg	caaactga		1188

<210> 322  
 <211> 394  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 322

Met	Ala	Glu	Ile	Cys	Leu	Ile	Thr	Gly	Thr	Pro	Gly	Ser	Gly	Lys	Thr
1				5					10					15	
Leu	Lys	Met	Val	Ser	Met	Met	Ala	Asn	Asp	Glu	Met	Phe	Lys	Pro	Asp
			20					25					30		
Glu	Asn	Gly	Ile	Arg	Arg	Lys	Val	Phe	Thr	Asn	Ile	Lys	Gly	Leu	Lys
		35					40					45			
Ile	Pro	His	Thr	Tyr	Ile	Glu	Thr	Asp	Ala	Lys	Lys	Leu	Pro	Lys	Ser
	50					55					60				
Thr	Asp	Glu	Gln	Leu	Ser	Ala	His	Asp	Met	Tyr	Glu	Trp	Ile	Lys	Lys
65					70					75					80
Pro	Glu	Asn	Ile	Gly	Ser	Ile	Val	Ile	Val	Asp	Glu	Ala	Gln	Asp	Val
				85					90					95	
Trp	Pro	Ala	Arg	Ser	Ala	Gly	Ser	Lys	Ile	Pro	Glu	Asn	Val	Gln	Trp
		100						105					110		
Leu	Asn	Thr	His	Arg	His	Gln	Gly	Ile	Asp	Ile	Phe	Val	Leu	Thr	Gln
		115					120					125			
Gly	Pro	Lys	Leu	Leu	Asp	Gln	Asn	Leu	Arg	Thr	Leu	Val	Arg	Lys	His
	130					135					140				
Tyr	His	Ile	Ala	Ser	Asn	Lys	Met	Gly	Met	Arg	Thr	Leu	Leu	Glu	Trp
145					150				155					160	
Lys	Ile	Cys	Ala	Asp	Asp	Pro	Val	Lys	Met	Ala	Ser	Ser	Ala	Phe	Ser
			165						170					175	
Ser	Ile	Tyr	Thr	Leu	Asp	Lys	Lys	Val	Tyr	Asp	Leu	Tyr	Glu	Ser	Ala
		180					185						190		
Glu	Val	His	Thr	Val	Asn	Lys	Val	Lys	Arg	Ser	Lys	Trp	Phe	Tyr	Thr
		195					200					205			
Leu	Pro	Val	Ile	Val	Leu	Leu	Ile	Pro	Val	Phe	Val	Gly	Leu	Ser	Tyr

210	215	220
Lys Met Leu Ser Ser Tyr Gly Lys Lys Gln Glu Glu Pro Ala Ala Gln 225 230 235 240		
Glu Ser Ala Ala Thr Glu Gln Gln Ala Val Leu Pro Asp Lys Thr Glu 245 250 255		
Gly Glu Pro Val Asn Asn Gly Asn Leu Thr Ala Asp Met Phe Val Pro 260 265 270		
Thr Leu Ser Glu Lys Pro Glu Ser Lys Pro Ile Tyr Asn Gly Val Arg 275 280 285		
Gln Val Arg Thr Phe Glu Tyr Ile Ala Gly Cys Ile Glu Gly Gly Arg 290 295 300		
Thr Gly Cys Ala Cys Tyr Ser His Gln Gly Thr Ala Leu Lys Glu Val 305 310 315 320		
Thr Glu Leu Met Cys Lys Asp Tyr Val Lys Asn Gly Leu Pro Phe Asn 325 330 335		
Pro Tyr Lys Glu Glu Ser Gln Gly Gln Glu Val Gln Gln Ser Ala Gln 340 345 350		
Gln His Ser Asp Arg Ala Gln Val Ala Thr Leu Gly Gly Lys Pro Gln 355 360 365		
Asn Leu Met Tyr Asp Asn Trp Glu Glu Arg Gly Lys Pro Phe Glu Gly 370 375 380		
Ile Gly Gly Gly Val Val Gly Ser Ala Asn 385 390		

<210> 323  
 <211> 1188  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 323	
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tccatgatgg caaacgatga aatgtttaag ccggatgaaa acggcatacg ccgtaaagta	120
tttacgaaca tcaaaggctt gaagataccg cacacctaca tagaaacgga cgcgaaaaag	180
ctgccgaaat cgacagatga gcagctttcg gcgcatgata tgtacgaatg gataaagaag	240
cccgaaaata tcgggtctat tgtcattgta gatgaagctc aagacgtatg gccggcacgc	300
tcggcaggtt caaaaatccc tgaaaatgtc caatggctga atacgcacag acatcagggc	360
attgatatat ttgttttgac tcaaggctct aagcttctag atcaaaatct tagaacgctt	420
gtacggaaac attaccacat cgcttcaaac aagatgggta tgcgtacgct tttagaatgg	480
aaaatatgcy cggacgatcc cgtaaaaatg gcatcaagcg cattctccag tatctataca	540
ctggataaaa aagtttatga cttgtacgaa tcagcgggaag ttcataccgt aaataaggtc	600
aagcgggtcaa aatggtttta tactctgccg gtaataatat tgctgattcc cgtttttgtc	660
ggcctgtcct ataaaatggt aagtagttat ggaaaaaac aggaagaacc cgcagacaa	720
gaatcggcgg caacagaaca tcaggcagta ttccaggata aaacagaagg cgagccggtg	780
aacaacggta accttaccgc agatatgttt gttccgacat tgtccgaaaa acccgaaagc	840
aagccgattt ataacggtgt aaggcaggtg agaacctttg aatatatagc aggctgtgta	900

gaaggcggaa	gaaccggatg	cacatgctat	tcgcatcaag	ggacggcatt	gaaagaaatt	960
acaaaggaaa	tgtgcaagga	ttacgcaaga	aacggattgc	cgtttaaccc	atataaagaa	1020
gaaagccaag	ggcgggatgt	ccagcaaagt	gagcagcacc	attcggacag	accgcaagtt	1080
gccacgttgg	gcggaaagcc	gtggcaaaat	cttatgtatg	ataattggca	ggagcgcgga	1140
aaaccgtttg	aaggaatcgg	cgggggcgtg	gtcggatcgg	caaactga		1188

<210> 324  
 <211> 395  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 324

Met	Ala	Glu	Ile	Cys	Leu	Ile	Thr	Gly	Thr	Pro	Gly	Ser	Gly	Lys	Thr	
1				5					10					15		
Leu	Lys	Met	Val	Ser	Met	Met	Ala	Asn	Asp	Glu	Met	Phe	Lys	Pro	Asp	
			20					25					30			
Glu	Asn	Gly	Ile	Arg	Arg	Lys	Val	Phe	Thr	Asn	Ile	Lys	Gly	Leu	Lys	
	35					40						45				
Ile	Pro	His	Thr	Tyr	Ile	Glu	Thr	Asp	Ala	Lys	Lys	Leu	Pro	Lys	Ser	
	50				55						60					
Thr	Asp	Glu	Gln	Leu	Ser	Ala	His	Asp	Met	Tyr	Glu	Trp	Ile	Lys	Lys	
65				70					75					80		
Pro	Glu	Asn	Ile	Gly	Ser	Ile	Val	Ile	Val	Asp	Glu	Ala	Gln	Asp	Val	
			85					90						95		
Trp	Pro	Ala	Arg	Ser	Ala	Gly	Ser	Lys	Ile	Pro	Glu	Asn	Val	Gln	Trp	
		100					105						110			
Leu	Asn	Thr	His	Arg	His	Gln	Gly	Ile	Asp	Ile	Phe	Val	Leu	Thr	Gln	
	115					120					125					
Gly	Ser	Lys	Leu	Leu	Asp	Gln	Asn	Leu	Arg	Thr	Leu	Val	Arg	Lys	His	
	130				135						140					
Tyr	His	Ile	Ala	Ser	Asn	Lys	Met	Gly	Met	Arg	Thr	Leu	Leu	Glu	Trp	
145				150					155					160		
Lys	Ile	Cys	Ala	Asp	Asp	Pro	Val	Lys	Met	Ala	Ser	Ser	Ala	Phe	Ser	
			165					170						175		
Ser	Ile	Tyr	Thr	Leu	Asp	Lys	Lys	Val	Tyr	Asp	Leu	Tyr	Glu	Ser	Ala	
		180					185						190			
Glu	Val	His	Thr	Val	Asn	Lys	Val	Lys	Arg	Ser	Lys	Trp	Phe	Tyr	Thr	
	195					200						205				
Leu	Pro	Val	Ile	Ile	Leu	Leu	Ile	Pro	Val	Phe	Val	Gly	Leu	Ser	Tyr	
	210				215						220					
Lys	Met	Leu	Ser	Ser	Tyr	Gly	Lys	Lys	Gln	Glu	Glu	Pro	Ala	Ala	Gln	
225				230					235					240		

<400>	325						
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gccacctttgg	gcggaaaaacc	cgcagcagaac	ctaatgtacg	acaattggga	agaacgcggg		1140
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 <212> PRT  
 <213> Neisseria gonorrhoeae

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 Ile Pro His Thr His Ile Glu Thr Asp Ala Lys Lys Leu Pro Lys Ser  
 50 55 60  
 Thr Asp Glu Gln Leu Ser Ala His Asp Met Tyr Glu Trp Ile Lys Lys  
 65 70 75 80  
 Pro Glu Asn Val Gly Ala Ile Val Ile Val Asp Glu Ala Gln Asp Val  
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 Trp Pro Ala Arg Ser Ala Gly Ser Lys Ile Pro Glu Asn Val Gln Trp  
 100 105 110  
 Leu Asn Thr His Arg His Gln Gly Ile Asp Ile Phe Val Leu Thr Gln  
 115 120 125  
 Gly Pro Lys Leu Leu Asp Gln Asn Leu Arg Thr Leu Val Lys Arg His  
 130 135 140  
 Tyr His Ile Ala Ala Asn Lys Met Gly Leu Arg Thr Leu Leu Glu Trp  
 145 150 155 160  
 Lys Val Cys Ala Asp Asp Pro Val Lys Met Ala Ser Ser Ala Phe Ser  
 165 170 175  
 Ser Ile Tyr Thr Leu Asp Lys Lys Val Tyr Asp Leu Tyr Glu Ser Ala  
 180 185 190  
 Glu Ile His Thr Val Asn Lys Val Lys Arg Ser Lys Trp Phe Tyr Ala  
 195 200 205  
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 210 215 220  
 Lys Met Leu Gly Ser Tyr Gly Lys Lys Gln Glu Glu Pro Ala Ala Gln  
 225 230 235 240  
 Glu Ser Ala Ala Thr Glu Gln Gln Ala Val Leu Pro Asp Lys Thr Glu  
 245 250 255  
 Gly Glu Ser Val Asn Asn Gly Asn Leu Thr Ala Asp Met Phe Val Pro  
 260 265 270



Thr Leu Pro Glu Lys Pro Glu Ser Lys Pro Ile Tyr Asn Gly Val Arg  
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Thr Glu Leu Met Cys Lys Asp Tyr Val Lys Asn Gly Leu Pro Phe Asn  
 325 330 335

Pro Tyr Lys Glu Glu Ser Gln Gly Gln Glu Val Gln Gln Ser Ala Gln  
 340 345 350

Gln His Ser Asp Arg Ala Gln Val Ala Thr Leu Gly Gly Lys Pro Gln  
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<210> 327

<211> 1091

<212> DNA

<213> Neisseria meningitidis

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<211> 371

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<213> Neisseria meningitidis

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35 40 45  
Gly Glu Lys Leu Glu Arg Thr Ile Arg Val Asn His Pro Leu Thr Leu  
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His Gly Ile Thr Ile Tyr Gln Ala Ser Phe Ala Asp Gly Gly Ser Asp  
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Leu Thr Phe Lys Ala Trp Asn Leu Gly Asp Ala Ser Arg Glu Pro Val  
85 90 95  
Val Leu Lys Ala Thr Ser Ile His Gln Phe Pro Leu Glu Ile Gly Lys  
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His Lys Tyr Arg Leu Glu Phe Asp Gln Phe Thr Ser Met Asn Val Glu  
115 120 125  
Asp Met Ser Glu Gly Ala Glu Arg Glu Lys Ser Leu Lys Ser Thr Leu  
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Pro Asp Val Arg Ala Val Thr Gln Glu Gly His Lys Tyr Thr Asn Xaa  
145 150 155 160  
Xaa Xaa Xaa Xaa Xaa Tyr Arg Ile Arg Asp Ala Pro Gly Gln Ala Val

165

170

175

Glu Tyr Lys Asn Tyr Met Leu Pro Val Leu Gln Glu Gln Asp Tyr Phe  
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Trp Ile Thr Gly Thr Arg Ser Xaa Leu Gln Gln Gln Tyr Arg Trp Leu  
195 200 205

Arg Ile Pro Leu Asp Lys Gln Leu Lys Ala Asp Thr Phe Met Ala Leu  
210 215 220

Arg Glu Phe Leu Lys Asp Gly Glu Gly Arg Lys Arg Xaa Val Ala Asp  
225 230 235 240

Ala Thr Lys Gly Ala Pro Ala Glu Ile Arg Glu Gln Phe Met Leu Ala  
245 250 255

Ala Glu Asn Thr Leu Asn Ile Phe Ala Gln Lys Gly Tyr Leu Gly Leu  
260 265 270

Asp Glu Phe Ile Thr Ser Asn Ile Pro Lys Glu Gln Gln Asp Lys Met  
275 280 285

Gln Gly Tyr Phe Tyr Glu Met Leu Tyr Gly Val Met Asn Ala Ala Leu  
290 295 300

Asp Glu Thr Xaa Thr Arg Tyr Gly Leu Pro Glu Trp Gln Gln Asp Glu  
305 310 315 320

Ala Arg Asn Arg Phe Leu Leu His Ser Met Asp Ala Tyr Thr Gly Leu  
325 330 335

Thr Glu Tyr Pro Ala Pro Met Leu Leu Gln Leu Asp Gly Phe Ser Glu  
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Val Arg Ser Ser Gly Leu Gln Met Thr Arg Ser Xaa Gly Pro Leu Leu  
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Val Tyr Leu  
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<210> 329

<211> 2016

<212> DNA

<213> Neisseria meningitidis

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<210> 330

<211> 671

<212> PRT

<213> Neisseria meningitidis

<400> 330

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Lys	Thr	Ile	Asn	Arg	Glu	Asp	Gly	Ser	Val	Leu	Ile	Ala	Ala	Lys	Lys		
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Gly	Thr	Met	Asn	Lys	Trp	Gly	Tyr	Ile	Phe	Ala	His	Val	Ala	Leu	Ile		
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Val	Ile	Cys	Leu	Gly	Gly	Leu	Ile	Asp	Ser	Asn	Leu	Leu	Leu	Lys	Leu		
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Leu	Asn	Ala	Asp	Asn	Gly	Ile	Leu	Val	Gln	Asp	Leu	Pro	Phe	Glu	Val		
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 485 490 495  
 Thr Leu Asn Ile Phe Ala Gln Lys Gly Tyr Leu Gly Leu Asp Glu Phe  
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 Phe Tyr Glu Met Leu Tyr Gly Val Met Asn Ala Ala Leu Asp Glu Thr  
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 Pro Ala Pro Met Leu Leu Gln Leu Asp Gly Phe Ser Glu Val Arg Ser  
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 Glu Lys Arg Ala Trp Val Leu Phe Ser Asp Gly Lys Ile Arg Phe Ala  
 625 630 635 640  
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 <212> DNA  
 <213> *Neisseria meningitidis*

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<210> 332  
 <211> 671  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 332

Met	Ser	Lys	Ser	Arg	Arg	Ser	Pro	Pro	Leu	Leu	Ser	Arg	Pro	Trp	Phe
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Ala	Phe	Phe	Ser	Ser	Met	Arg	Phe	Ala	Val	Ala	Leu	Leu	Ser	Leu	Leu
			20					25					30		
Gly	Ile	Ala	Ser	Val	Ile	Gly	Thr	Val	Leu	Gln	Gln	Asn	Gln	Pro	Gln
	35					40						45			
Thr	Asp	Tyr	Leu	Val	Lys	Phe	Gly	Ser	Phe	Trp	Ala	Gln	Ile	Phe	Gly
	50					55					60				
Phe	Leu	Gly	Leu	Tyr	Asp	Val	Tyr	Ala	Ser	Ala	Trp	Phe	Val	Val	Ile
65				70					75					80	
Met	Met	Phe	Leu	Val	Val	Ser	Thr	Ser	Leu	Cys	Leu	Ile	Arg	Asn	Val
			85						90					95	
Pro	Pro	Phe	Trp	Arg	Glu	Met	Lys	Ser	Phe	Arg	Glu	Lys	Val	Lys	Glu
			100					105						110	

Lys	Ser	Leu	Ala	Ala	Met	Arg	His	Ser	Ser	Leu	Leu	Asp	Val	Lys	Ile	115	120	125
Ala	Pro	Glu	Val	Ala	Lys	Arg	Tyr	Leu	Glu	Val	Gln	Gly	Phe	Gln	Gly	130	135	140
Lys	Thr	Ile	Asn	Arg	Glu	Asp	Gly	Ser	Val	Leu	Ile	Ala	Ala	Lys	Lys	145	150	155
Gly	Thr	Met	Asn	Lys	Trp	Gly	Tyr	Ile	Phe	Ala	His	Val	Ala	Leu	Ile	165	170	175
Val	Ile	Cys	Leu	Gly	Gly	Leu	Ile	Asp	Ser	Asn	Leu	Leu	Leu	Lys	Leu	180	185	190
Gly	Met	Leu	Thr	Gly	Arg	Ile	Val	Pro	Asp	Asn	Gln	Ala	Val	Tyr	Ala	195	200	205
Lys	Asp	Phe	Lys	Pro	Glu	Ser	Ile	Leu	Gly	Ala	Ser	Asn	Leu	Ser	Phe	210	215	220
Arg	Gly	Asn	Val	Asn	Ile	Ser	Glu	Gly	Gln	Ser	Ala	Asp	Val	Val	Phe	225	230	235
Leu	Asn	Ala	Asp	Asn	Gly	Ile	Leu	Val	Gln	Asp	Leu	Pro	Phe	Glu	Val	245	250	255
Lys	Leu	Lys	Lys	Phe	His	Ile	Asp	Phe	Tyr	Asn	Thr	Gly	Met	Pro	Arg	260	265	270
Asp	Phe	Ala	Ser	Asp	Ile	Glu	Val	Thr	Asp	Lys	Ala	Thr	Gly	Glu	Lys	275	280	285
Leu	Glu	Arg	Thr	Ile	Arg	Val	Asn	His	Pro	Leu	Thr	Leu	His	Gly	Ile	290	295	300
Thr	Ile	Tyr	Gln	Ala	Ser	Phe	Ala	Asp	Gly	Gly	Ser	Asp	Leu	Thr	Phe	305	310	315
Lys	Ala	Trp	Asn	Leu	Gly	Asp	Ala	Ser	Arg	Glu	Pro	Val	Val	Leu	Lys	325	330	335
Ala	Thr	Ser	Ile	His	Gln	Phe	Pro	Leu	Glu	Ile	Gly	Lys	His	Lys	Tyr	340	345	350
Arg	Leu	Glu	Phe	Asp	Gln	Phe	Thr	Ser	Met	Asn	Val	Glu	Asp	Met	Ser	355	360	365
Glu	Gly	Ala	Glu	Arg	Glu	Lys	Ser	Leu	Lys	Ser	Thr	Leu	Asn	Asp	Val	370	375	380
Arg	Ala	Val	Thr	Gln	Glu	Gly	Lys	Lys	Tyr	Thr	Asn	Ile	Gly	Pro	Ser	385	390	395
Ile	Val	Tyr	Arg	Ile	Arg	Asp	Ala	Ala	Gly	Gln	Ala	Val	Glu	Tyr	Lys	405	410	415



Asn Tyr Met Leu Pro Val Leu Gln Glu Gln Asp Tyr Phe Trp Ile Thr  
                   420                                  425                                  430  
 Gly Thr Arg Ser Gly Leu Gln Gln Gln Tyr Arg Trp Leu Arg Ile Pro  
                   435                                  440                                  445  
 Leu Asp Lys Gln Leu Lys Ala Asp Thr Phe Met Ala Leu Arg Glu Phe  
                   450                                  455                                  460  
 Leu Lys Asp Gly Glu Gly Arg Lys Arg Leu Val Ala Asp Ala Thr Lys  
                   465                                  470                                  475                                  480  
 Gly Ala Pro Ala Glu Ile Arg Glu Gln Phe Met Leu Ala Ala Glu Asn  
                                   485                                  490                                  495  
 Thr Leu Asn Ile Phe Ala Gln Lys Gly Tyr Leu Gly Leu Asp Glu Phe  
                                   500                                  505                                  510  
 Ile Thr Ser Asn Ile Pro Lys Glu Gln Gln Asp Lys Met Gln Gly Tyr  
                   515                                  520                                  525  
 Phe Tyr Glu Met Leu Tyr Gly Val Met Asn Ala Ala Leu Asp Glu Thr  
                   530                                  535                                  540  
 Ile Arg Arg Tyr Gly Leu Pro Glu Trp Gln Gln Asp Glu Ala Arg Asn  
                   545                                  550                                  555                                  560  
 Arg Phe Leu Leu His Ser Met Asp Ala Tyr Thr Gly Leu Thr Glu Tyr  
                                   565                                  570                                  575  
 Pro Ala Pro Met Leu Leu Gln Leu Asp Gly Phe Ser Glu Val Arg Ser  
                                   580                                  585                                  590  
 Ser Gly Leu Gln Met Thr Arg Ser Pro Gly Ala Leu Leu Val Tyr Leu  
                   595                                  600                                  605  
 Gly Ser Val Leu Leu Val Leu Gly Thr Val Leu Met Phe Tyr Val Arg  
                   610                                  615                                  620  
 Glu Lys Arg Ala Trp Val Leu Phe Ser Asp Gly Lys Ile Arg Phe Ala  
                   625                                  630                                  635                                  640  
 Met Ser Ser Ala Arg Ser Glu Arg Asp Leu Gln Lys Glu Phe Pro Lys  
                                   645                                  650                                  655  
 His Val Glu Ser Leu Gln Arg Leu Gly Lys Asp Leu Asn His Asp  
                                   660                                  665                                  670

<210> 333  
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 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
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<223> N= Unknown

<400> 333  
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8

<210> 334  
<211> 434  
<212> PRT  
<213> Neisseria gonorrhoeae

<220>  
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<222> (398)..(398)  
<223> Xaa= any amino acid

<400> 334  
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20 25 30  
Met Pro Arg Asp Phe Ala Ser Asp Ile Glu Val Thr Asp Lys Ala Thr  
35 40 45  
Gly Glu Lys Leu Glu Arg Thr Ile Arg Val Asn His Pro Leu Thr Leu  
50 55 60  
His Gly Ile Thr Ile Tyr Gln Ala Ser Phe Ala Asp Gly Gly Ser Asp  
65 70 75 80  
Leu Thr Phe Lys Ala Trp Asn Leu Arg Asp Ala Ser Arg Glu Pro Val  
85 90 95  
Val Leu Lys Ala Thr Ser Ile His Gln Phe Pro Leu Glu Ile Gly Lys  
100 105 110  
His Lys Tyr Arg Leu Glu Phe Asp Gln Phe Thr Ser Met Asn Val Glu  
115 120 125  
Asp Met Ser Glu Gly Ala Glu Arg Glu Lys Ser Leu Lys Ser Thr Leu  
130 135 140  
Asn Asp Val Arg Ala Val Thr Gln Glu Gly Lys Lys Tyr Thr Asn Ile  
145 150 155 160  
Gly Pro Ser Ile Val Tyr Arg Ile Arg Asp Ala Ala Gly Gln Ala Val  
165 170 175  
Glu Tyr Lys Asn Tyr Met Leu Pro Ile Leu Gln Asp Lys Asp Tyr Phe  
180 185 190  
Trp Leu Thr Gly Thr Arg Ser Gly Leu Gln Gln Gln Tyr Arg Trp Leu  
195 200 205  
Arg Ile Pro Leu Asp Lys Gln Leu Lys Ala Asp Thr Phe Met Ala Leu

210	215	220
Arg Glu Phe Leu Lys Asp Gly Glu Gly Arg Lys Arg Leu Val Ala Asp 225 230 235 240		
Ala Thr Lys Asp Ala Pro Ala Glu Ile Arg Glu Gln Phe Met Leu Ala 245 250 255		
Ala Glu Asn Thr Leu Asn Ile Phe Ala Gln Lys Gly Tyr Leu Gly Leu 260 265 270		
Asp Glu Phe Ile Thr Ser Asn Ile Pro Lys Gly Gln Gln Asp Lys Met 275 280 285		
Gln Gly Tyr Phe Tyr Glu Met Leu Tyr Gly Val Met Asn Ala Ala Leu 290 295 300		
Asp Glu Thr Ile Arg Arg Tyr Gly Leu Pro Glu Trp Gln Gln Asp Glu 305 310 315 320		
Ala Arg Asn Arg Phe Leu Leu His Ser Met Asp Ala Tyr Thr Gly Leu 325 330 335		
Thr Glu Tyr Pro Ala Pro Met Leu Leu Gln Leu Asp Gly Phe Ser Glu 340 345 350		
Val Arg Ser Ser Gly Leu Gln Met Thr Arg Ser Pro Gly Ala Leu Leu 355 360 365		
Val Tyr Leu Gly Ser Val Leu Leu Val Leu Gly Thr Val Phe Met Phe 370 375 380		
Tyr Val Pro Lys Lys Arg Ala Trp Val Leu Phe Ser Asn Xaa Lys Ile 385 390 395 400		
Arg Phe Ala Met Ser Ser Ala Arg Ser Glu Arg Asp Leu Gln Lys Glu 405 410 415		
Phe Pro Lys His Val Glu Ser Leu Gln Arg Leu Gly Lys Asp Leu Asn 420 425 430		

His Asp

<210> 335  
 <211> 2016  
 <212> DNA  
 <213> Neisseria gonorrhoeae

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atgagtaa	120
atgagtaa	180
atgagtaa	240
atgagtaa	300
atgagtaa	360

tcttcgctgt	tggatgtaaa	aattgcccc	gaagttgcca	aacgttatct	ggaggtgcgg	420
ggttttcagg	gaaaaaccgt	cagccgtgag	gacgggtcgg	ttctgattgc	cgccaaaaaa	480
ggcacaatga	acaaatgggg	ctatatcttt	gcccaagtag	ctttgattgt	catttgacctg	540
ggcgggttga	tagacagtaa	cctgctgctg	aagctgggta	tgctggccgg	tcggattgtt	600
ccggacaatc	aggcggttta	tgccaaggat	ttcaagcccg	aaagtatttt	gggtgcgtcc	660
aatctctcat	ttaggggcaa	cgtcaatatt	tccgaggggc	aaagtgcgga	tgtggttttc	720
ctgaatgccg	acaacgggat	gttggttcag	gacttgccct	ttgaagtcaa	actgaaaaaa	780
ttccatatcg	atTTTTTaca	tacgggtatg	ccgcgcgatt	ttgccagcga	tattgaagta	840
acggacaagg	caaccggtga	gaaactcgag	cgaccatcc	gcgtgaacca	tcctttgacc	900
ttgcacggca	tcacgattta	tcaggcgagt	tttgccgacg	gcggttcgga	tttgacattc	960
aaggcgtgga	atttgaggga	tgcttcgcgc	gaacctgtcg	tggtgaaggc	aacctccata	1020
caccagtttc	cgttggaaat	cggaacaacac	aaatatcgtc	ttgagttcga	tcagttcact	1080
tctatgaatg	tggaggacat	gagcgagggt	gcggaacggg	aaaaaagcct	gaaatccact	1140
ctgaacgatg	tccgcgccgt	tactcaggaa	ggtaaaaaat	acaccaatat	cggcccttcc	1200
atcgtgtacc	gcacccgtga	tgccgcaggg	caggcggtcg	aatataaaaa	ctatatgctg	1260
ccgattttgc	aggacaaaga	ttatttttgg	ctgaccggca	cgcgacgcgg	cttgacgcag	1320
caataccgct	ggctgcgtat	ccccttggac	aagcagttga	aagcggacac	ctttatggca	1380
ttgctgagtg	ttttgaaaga	tggggaaggg	cgcaaacgtc	tggttgccga	cgcaaccaaa	1440
gacgcacctg	ccgaaatccg	cgaacaattc	atgctggctg	cggaaaacac	gctgaatatc	1500
tttgcgcaaa	aaggctattt	gggattggac	gaatttatta	cgtccaatat	cccgaagggt	1560
cagcaggata	agatgcaggg	ctatttctac	gaaatgcttt	acggcgtgat	gaacgctgct	1620
ttggatgaaa	ccatacgccg	gtacggcttg	cccgaatggc	agcaggatga	agcgcggaac	1680
cgtttctctg	tgcacagtat	ggatgcctat	acggggctga	cggaatatcc	cgcgccctatg	1740
ctgctccagc	ttgacgggtt	ttccgagggtg	cgttcctcag	gtttgcagat	gaccgcgttcg	1800
ccgggtgcgc	ttttggtcta	tctcggtctg	gtattgttgg	ttttgggtac	ggtattttatg	1860
ttttatgtgc	gcgaaaaacg	ggcgtgggta	ttgttttcag	acggcaaaat	ccgttttgct	1920
atgtcttcgg	cccgcagcga	acgggatttg	cagaaggaat	ttccaaaaca	cgtcgagagc	1980
ctgcaacggc	tcggcaagga	cttgaatcat	gactga			2016

<210> 336

<211> 671

<212> PRT

<213> Neisseria gonorrhoeae

<400> 336

Met	Ser	Lys	Ser	Arg	Ser	Pro	Pro	Leu	Leu	Ser	Arg	Pro	Trp	Phe
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Ala	Phe	Phe	Ser	Ser	Met	Arg	Phe	Ala	Val	Ala	Leu	Leu	Ser	Leu
			20					25					30	
Gly	Ile	Ala	Ser	Val	Ile	Gly	Thr	Val	Leu	Gln	Gln	Asn	Gln	Pro
	35						40					45		
Thr	Asp	Tyr	Leu	Val	Lys	Phe	Gly	Ser	Phe	Trp	Ala	Gln	Ile	Phe
	50					55					60			
Phe	Leu	Gly	Leu	Tyr	Asp	Val	Tyr	Ala	Ser	Ala	Trp	Phe	Val	Ile
65					70				75					80
Met	Met	Phe	Leu	Val	Val	Ser	Thr	Ser	Leu	Cys	Leu	Ile	Arg	Asn
			85						90				95	
Pro	Pro	Phe	Trp	Arg	Glu	Met	Lys	Ser	Phe	Arg	Glu	Lys	Val	Lys
			100					105					110	

Lys	Ser	Leu	Ala	Ala	Met	Arg	His	Ser	Ser	Leu	Leu	Asp	Val	Lys	Ile	115	120	125
Ala	Pro	Glu	Val	Ala	Lys	Arg	Tyr	Leu	Glu	Val	Gln	Gly	Phe	Gln	Gly	130	135	140
Lys	Thr	Ile	Asn	Arg	Glu	Asp	Gly	Ser	Val	Leu	Ile	Ala	Ala	Lys	Lys	145	150	155
Gly	Thr	Met	Asn	Lys	Trp	Gly	Tyr	Ile	Phe	Ala	His	Val	Ala	Leu	Ile	165	170	175
Val	Ile	Cys	Leu	Gly	Gly	Leu	Ile	Asp	Ser	Asn	Leu	Leu	Leu	Lys	Leu	180	185	190
Gly	Met	Leu	Thr	Gly	Arg	Ile	Val	Pro	Asp	Asn	Gln	Ala	Val	Tyr	Ala	195	200	205
Lys	Asp	Phe	Lys	Pro	Glu	Ser	Ile	Leu	Gly	Ala	Ser	Asn	Leu	Ser	Phe	210	215	220
Arg	Gly	Asn	Val	Asn	Ile	Ser	Glu	Gly	Gln	Ser	Ala	Asp	Val	Val	Phe	225	230	235
Leu	Asn	Ala	Asp	Asn	Gly	Ile	Leu	Val	Gln	Asp	Leu	Pro	Phe	Glu	Val	245	250	255
Lys	Leu	Lys	Lys	Phe	His	Ile	Asp	Phe	Tyr	Asn	Thr	Gly	Met	Pro	Arg	260	265	270
Asp	Phe	Ala	Ser	Asp	Ile	Glu	Val	Thr	Asp	Lys	Ala	Thr	Gly	Glu	Lys	275	280	285
Leu	Glu	Arg	Thr	Ile	Arg	Val	Asn	His	Pro	Leu	Thr	Leu	His	Gly	Ile	290	295	300
Thr	Ile	Tyr	Gln	Ala	Ser	Phe	Ala	Asp	Gly	Gly	Ser	Asp	Leu	Thr	Phe	305	310	315
Lys	Ala	Trp	Asn	Leu	Gly	Asp	Ala	Ser	Arg	Glu	Pro	Val	Val	Leu	Lys	325	330	335
Ala	Thr	Ser	Ile	His	Gln	Phe	Pro	Leu	Glu	Ile	Gly	Lys	His	Lys	Tyr	340	345	350
Arg	Leu	Glu	Phe	Asp	Gln	Phe	Thr	Ser	Met	Asn	Val	Glu	Asp	Met	Ser	355	360	365
Glu	Gly	Ala	Glu	Arg	Glu	Lys	Ser	Leu	Lys	Ser	Thr	Leu	Asn	Asp	Val	370	375	380
Arg	Ala	Val	Thr	Gln	Glu	Gly	Lys	Lys	Tyr	Thr	Asn	Ile	Gly	Pro	Ser	385	390	395
Ile	Val	Tyr	Arg	Ile	Arg	Asp	Ala	Ala	Gly	Gln	Ala	Val	Glu	Tyr	Lys	405	410	415

Asn Tyr Met Leu Pro Val Leu Gln Glu Gln Asp Tyr Phe Trp Ile Thr  
                   420                                  425                                  430  
 Gly Thr Arg Ser Gly Leu Gln Gln Gln Tyr Arg Trp Leu Arg Ile Pro  
                   435                                  440                                  445  
 Leu Asp Lys Gln Leu Lys Ala Asp Thr Phe Met Ala Leu Arg Glu Phe  
                   450                                  455                                  460  
 Leu Lys Asp Gly Glu Gly Arg Lys Arg Leu Val Ala Asp Ala Thr Lys  
                   465                                  470                                  475                                  480  
 Gly Ala Pro Ala Glu Ile Arg Glu Gln Phe Met Leu Ala Ala Glu Asn  
                                   485                                  490                                  495  
 Thr Leu Asn Ile Phe Ala Gln Lys Gly Tyr Leu Gly Leu Asp Glu Phe  
                                   500                                  505                                  510  
 Ile Thr Ser Asn Ile Pro Lys Glu Gln Gln Asp Lys Met Gln Gly Tyr  
                   515                                  520                                  525  
 Phe Tyr Glu Met Leu Tyr Gly Val Met Asn Ala Ala Leu Asp Glu Thr  
                   530                                  535                                  540  
 Ile Arg Arg Tyr Gly Leu Pro Glu Trp Gln Gln Asp Glu Ala Arg Asn  
                   545                                  550                                  555                                  560  
 Arg Phe Leu Leu His Ser Met Asp Ala Tyr Thr Gly Leu Thr Glu Tyr  
                                   565                                  570                                  575  
 Pro Ala Pro Met Leu Leu Gln Leu Asp Gly Phe Ser Glu Val Arg Ser  
                                   580                                  585                                  590  
 Ser Gly Leu Gln Met Thr Arg Ser Pro Gly Ala Leu Leu Val Tyr Leu  
                   595                                  600                                  605  
 Gly Ser Val Leu Leu Val Leu Gly Thr Val Leu Met Phe Tyr Val Arg  
                   610                                  615                                  620  
 Glu Lys Arg Ala Trp Val Leu Phe Ser Asp Gly Lys Ile Arg Phe Ala  
                   625                                  630                                  635                                  640  
 Met Ser Ser Ala Arg Ser Glu Arg Asp Leu Gln Lys Glu Phe Pro Lys  
                                   645                                  650                                  655  
 His Val Glu Ser Leu Gln Arg Leu Gly Lys Asp Leu Asn His Asp  
                                   660                                  665                                  670

<210> 337  
 <211> 489  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 337  
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 gcgatactcg gcattatcag cgtcattgcc ataccttctt atcmaagtta tattgaaaaa 120

ggctatcagt	cccagcttta	tacggagatg	gycggtatca	acaatatttc	caaacagttt	180
attttgaaaa	atcccctgga	cgataatcag	accatcgaga	acaaactgga	aatatttgtc	240
tcaggctata	agatgaatcc	gaaaattgcc	aaaaaatata	gtgtttcggg	aaagtttgtc	300
gataaggaaa	aatcaagggc	atacagggtg	gtcggcgttc	cgaaggcggg	gacgggttat	360
actttgtcgg	tatggatgaa	cagcgtgggc	gacggataca	aatgccgtga	tgccgcttct	420
gcccaagccc	atttgagac	cttgtcctca	gatgtcggct	gtgaagcctt	ctctaatacgt	480
aaaaaataa						489

<210> 338  
 <211> 162  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
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 <222> (5)..(5)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (7)..(7)  
 <223> Xaa= any amino acid

<220>  
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 <222> (15)..(16)  
 <223> Xaa= any amino acid

<220>  
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 <222> (35)..(35)  
 <223> Xaa= any amino acid

<220>  
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 <222> (51)..(51)  
 <223> Xaa= any amino acid

<400> 338  
 Met Met Ser Asn Xaa Met Xaa Gln Lys Gly Phe Thr Leu Ile Xaa Xaa  
 1 5 10 15  
 Met Ile Val Val Ala Ile Leu Gly Ile Ile Ser Val Ile Ala Ile Pro  
 20 25 30  
 Ser Tyr Xaa Ser Tyr Ile Glu Lys Gly Tyr Gln Ser Gln Leu Tyr Thr  
 35 40 45  
 Glu Met Xaa Gly Ile Asn Asn Ile Ser Lys Gln Phe Ile Leu Lys Asn  
 50 55 60  
 Pro Leu Asp Asp Asn Gln Thr Ile Glu Asn Lys Leu Glu Ile Phe Val  
 65 70 75 80  
 Ser Gly Tyr Lys Met Asn Pro Lys Ile Ala Lys Lys Tyr Ser Val Ser  
 85 90 95

Val Lys Phe Val Asp Lys Glu Lys Ser Arg Ala Tyr Arg Leu Val Gly  
 100 105 110

Val Pro Lys Ala Gly Thr Gly Tyr Thr Leu Ser Val Trp Met Asn Ser  
 115 120 125

Val Gly Asp Gly Tyr Lys Cys Arg Asp Ala Ala Ser Ala Gln Ala His  
 130 135 140

Leu Glu Thr Leu Ser Ser Asp Val Gly Cys Glu Ala Phe Ser Asn Arg  
 145 150 155 160

Lys Lys

<210> 339  
 <211> 489  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 339  
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 gcgatactcg gcattatcag cgtcattgcc ataccttctt atcaaagtta tattgaaaaa 120  
 ggctatcagt cccagcttta tacggagatg gtcggtatca acaatatttc caaacagttt 180  
 attttgaaaa atcccctgga cgataatcag accatcgaga acaaactgga aatatttgtc 240  
 tcagggtata agatgaatcc gaaaattgcc aaaaaatata gtgtttcggg aaagtttgtc 300  
 gataaggaaa aatcaagggc atacagggttg gtcggcggttc cgaaggcggg gacggggttat 360  
 actttgtcgg tatggatgaa cagcgtgggc gacggataca aatgccgtga tgccgcttct 420  
 gcccaagccc atttgagagac cttgtcctca gatgtcggct gtgaagcctt ctctaactcg 480  
 aaaaaataa 489

<210> 340  
 <211> 162  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 340  
 Met Met Ser Asn Lys Met Glu Gln Lys Gly Phe Thr Leu Ile Glu Met  
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 Met Ile Val Val Ala Ile Leu Gly Ile Ile Ser Val Ile Ala Ile Pro  
 20 25 30  
 Ser Tyr Gln Ser Tyr Ile Glu Lys Gly Tyr Gln Ser Gln Leu Tyr Thr  
 35 40 45  
 Glu Met Val Gly Ile Asn Asn Ile Ser Lys Gln Phe Ile Leu Lys Asn  
 50 55 60  
 Pro Leu Asp Asp Asn Gln Thr Ile Glu Asn Lys Leu Glu Ile Phe Val  
 65 70 75 80  
 Ser Gly Tyr Lys Met Asn Pro Lys Ile Ala Lys Lys Tyr Ser Val Ser  
 85 90 95  
 Val Lys Phe Val Asp Lys Glu Lys Ser Arg Ala Tyr Arg Leu Val Gly



	100		105		110										
Val	Pro	Lys	Ala	Gly	Thr	Gly	Tyr	Thr	Leu	Ser	Val	Trp	Met	Asn	Ser
	115						120					125			
Val	Gly	Asp	Gly	Tyr	Lys	Cys	Arg	Asp	Ala	Ala	Ser	Ala	Gln	Ala	His
	130					135					140				
Leu	Glu	Thr	Leu	Ser	Ser	Asp	Val	Gly	Cys	Glu	Ala	Phe	Ser	Asn	Arg
145					150					155					160

Lys Lys

<210> 341  
 <211> 489  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
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 <223> N= Unknown

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 <223> N= Unknown

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<222> (68)..(68)  
<223> N= Unknown

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<222> (88)..(88)  
<223> N= Unknown

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<222> (90)..(90)  
<223> N= Unknown

<220>  
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<222> (93)..(95)  
<223> N= Unknown

<220>  
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<222> (97)..(97)  
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<223> N= Unknown

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<223> N= Unknown

<220>  
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<223> N= Unknown

<400> 341

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gcgatacncn	gcnttancag	cgtcattncn	atnnmtncnt	atcnnagtta	tattgaaaaa	120
ggctatcagt	cccagcttta	tacggagatg	gtcggtatca	acaatatattc	caaacagtnt	180
attttgaaaa	atccccctgga	cgataatcag	accatcaaga	gcaaactgga	aatattttgtc	240
tcaggctata	agatgaatcc	gaaaattgcc	gaaaaatata	atgtttcggg	gcattttgtc	300
aatgaggaaa	aaccnagggc	atacagcttg	gtcggcggtc	caaagacggg	gacgggttat	360
actttgtcgg	tatggatgaa	cagcgtgggc	gacggataca	aatgccgtga	tgccgcttct	420
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aaaaaatag						489

<210> 342

<211> 162

<212> PRT

<213> Neisseria meningitidis

<220>

<221> misc\_feature

<222> (15)..(20)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (23)..(26)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (30)..(33)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (35)..(35)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (60)..(60)

<223> Xaa= any amino acid

<400> 342

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Xaa	Xaa	Xaa	Xaa	Ala	Ile	Xaa	Xaa	Xaa	Xaa	Ser	Val	Ile	Xaa	Xaa	Xaa
			20					25					30		
Xaa	Tyr	Xaa	Ser	Tyr	Ile	Glu	Lys	Gly	Tyr	Gln	Ser	Gln	Leu	Tyr	Thr
	35						40				45				
Glu	Met	Val	Gly	Ile	Asn	Asn	Ile	Ser	Lys	Gln	Xaa	Ile	Leu	Lys	Asn
	50					55					60				

Pro Leu Asp Asp Asn Gln Thr Ile Lys Ser Lys Leu Glu Ile Phe Val  
65 70 75 80

Ser Gly Tyr Lys Met Asn Pro Lys Ile Ala Glu Lys Tyr Asn Val Ser  
85 90 95

Val His Phe Val Asn Glu Glu Lys Pro Arg Ala Tyr Ser Leu Val Gly  
100 105 110

Val Pro Lys Thr Gly Thr Gly Tyr Thr Leu Ser Val Trp Met Asn Ser  
115 120 125

Val Gly Asp Gly Tyr Lys Cys Arg Asp Ala Ala Ser Ala Arg Ala His  
130 135 140

Leu Glu Thr Leu Ser Ser Asp Val Gly Cys Glu Ala Phe Ser Asn Arg  
145 150 155 160

Lys Lys

<210> 343

<211> 489

<212> DNA

<213> Neisseria gonorrhoeae

<400> 343

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ggctatcagt	cccagcttta	tacggagatg	gtcggtatca	acaatgttct	caaacagttt	180
atthtgaaaa	atccccagga	cgataatgat	accctcaaga	gcaaactgaa	aatatthtgc	240
tcaggctata	agatgaatcc	gaaaattgcc	aaaaaatata	gtgtttcggg	aaggthtgc	300
gatgcggaaa	aaccaagggc	atacaggttg	gtcggcggtc	cgaacgcggg	gacgggttat	360
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gcccaggcct	attcggacac	cttgctcgca	gatagcggct	gtgaagcttt	ctctaactcg	480
aaaaaatag						489

<210> 344

<211> 162

<212> PRT

<213> Neisseria gonorrhoeae

<400> 344

Met Met Ser Asn Lys Met Glu Gln Lys Gly Phe Thr Leu Ile Glu Met  
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Met Ile Val Val Thr Ile Leu Gly Ile Ile Ser Val Ile Ala Ile Pro  
20 25 30

Ser Tyr Gln Ser Tyr Ile Glu Lys Gly Tyr Gln Ser Gln Leu Tyr Thr  
35 40 45

Glu Met Val Gly Ile Asn Asn Val Leu Lys Gln Phe Ile Leu Lys Asn  
50 55 60

Pro Gln Asp Asp Asn Asp Thr Leu Lys Ser Lys Leu Lys Ile Phe Val

65	70	75	80
Ser Gly Tyr Lys Met Asn Pro Lys Ile Ala Lys Lys Tyr Ser Val Ser			
85	90	95	
Val Arg Phe Val Asp Ala Glu Lys Pro Arg Ala Tyr Arg Leu Val Gly			
100	105	110	
Val Pro Asn Ala Gly Thr Gly Tyr Thr Leu Ser Val Trp Met Asn Ser			
115	120	125	
Val Gly Asp Gly Tyr Lys Cys Arg Asp Ala Thr Ser Ala Gln Ala Tyr			
130	135	140	
Ser Asp Thr Leu Ser Ala Asp Ser Gly Cys Glu Ala Phe Ser Asn Arg			
145	150	155	160

Lys Lys

<210> 345  
 <211> 276  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (263)..(263)  
 <223> N= Unknown

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atcttaaaaa acggcgatgc caacaccgct cgccaaaaag ccgaagccta tgcgattccc	180
tatttcgatt tccaacgtat gaccgcattg gcggtcggca acccttgsg caccggtccg	240
acggcaaaaa caagcgttgg ccnagaattt caacc	276

<210> 346  
 <211> 93  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
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 <222> (77)..(77)  
 <223> Xaa= any amino acid

<220>  
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 <222> (79)..(79)  
 <223> Xaa= any amino acid

<220>  
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 <222> (82)..(82)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (89)..(89)  
 <223> Xaa= any amino acid

<400> 346

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 1 5 10 15

Ile Gly Met Ala Phe Ala Ala Pro Ala Asp Ala Val Ser Gln Ile Arg  
 20 25 30

Gln Asn Ala Thr Gln Val Leu Ser Ile Leu Lys Asn Gly Asp Ala Asn  
 35 40 45

Thr Ala Arg Gln Lys Ala Glu Ala Tyr Ala Ile Pro Tyr Phe Asp Phe  
 50 55 60

Gln Arg Met Thr Ala Leu Ala Val Gly Asn Pro Trp Xaa Thr Xaa Ser  
 65 70 75 80

Asp Xaa Gln Lys Gln Ala Leu Ala Xaa Glu Phe Gln Pro  
 85 90

<210> 347  
 <211> 591  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 347

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atcttaaaaa	acggcgatgc	caacaccgct	cgccaaaaag	ccgaagccta	tgcgattccc	180
tatttcgatt	tccaacgtat	gaccgcattg	gcggtcggca	acccttggcg	caccgcgtcc	240
gacgcgcaaa	aacaagcgtt	ggccaaagaa	tttcaaacc	tgctgatccg	cacctattcc	300
ggcacgatgc	tgaaattaaa	aaacgccaac	gtcaacgtca	aagacaatcc	catcgtcaat	360
aaaggcggca	aagaaatcat	cgtccgcgcc	gaagtcggcg	taccggggca	aaaaccgctc	420
aacatggact	tcaccaccta	ccaaagcggc	ggtaaatacc	gtacctacaa	cgtcgccatc	480
gaaggcgcca	gcctggttac	cgtgtaccgc	aaccaattcg	gcgaaattat	caaagcgaaa	540
ggcgtggacg	gactgattgc	cgagttgaaa	gccaaaaacg	gcggcaaata	a	591

<210> 348  
 <211> 196  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 348

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 1 5 10 15

Ile Gly Met Ala Phe Ala Ala Pro Ala Asp Ala Val Ser Gln Ile Arg  
 20 25 30

Gln Asn Ala Thr Gln Val Leu Ser Ile Leu Lys Asn Gly Asp Ala Asn  
 35 40 45

Thr Ala Arg Gln Lys Ala Glu Ala Tyr Ala Ile Pro Tyr Phe Asp Phe  
 50 55 60  
 Gln Arg Met Thr Ala Leu Ala Val Gly Asn Pro Trp Arg Thr Ala Ser  
 65 70 75 80  
 Asp Ala Gln Lys Gln Ala Leu Ala Lys Glu Phe Gln Thr Leu Leu Ile  
 85 90 95  
 Arg Thr Tyr Ser Gly Thr Met Leu Lys Leu Lys Asn Ala Asn Val Asn  
 100 105 110  
 Val Lys Asp Asn Pro Ile Val Asn Lys Gly Gly Lys Glu Ile Ile Val  
 115 120 125  
 Arg Ala Glu Val Gly Val Pro Gly Gln Lys Pro Val Asn Met Asp Phe  
 130 135 140  
 Thr Thr Tyr Gln Ser Gly Gly Lys Tyr Arg Thr Tyr Asn Val Ala Ile  
 145 150 155 160  
 Glu Gly Ala Ser Leu Val Thr Val Tyr Arg Asn Gln Phe Gly Glu Ile  
 165 170 175  
 Ile Lys Ala Lys Gly Val Asp Gly Leu Ile Ala Glu Leu Lys Ala Lys  
 180 185 190  
 Asn Gly Gly Lys  
 195

<210> 349  
 <211> 591  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 349  
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 atcttaaaaa gcggtgatgc caacaccgcc cgccaaaaag ccgaagccta tgcgattccc 180  
 tatttcgatt tccaacgtat gaccgcattg gcggtcggca acccttggcg caccgcgtcc 240  
 gacgcgcaaa aacaagcgtt ggccaaagaa tttcaaacc tgctgatccg cacctattcc 300  
 ggcacgatgc tgaaattaaa aaacgccaac gtcaacgtca aagacaatcc catcgtcaat 360  
 aaaggcggca aagaaatcat cgtccgcgcc gaagtcggcg taccggggca aaaaccgcgc 420  
 aacatggact tcaccaccta ccaaagcggc ggtaaatacc gtacctaca cgtcgccatc 480  
 gaaggcgcga gcctggttac cgtgtaccgc aaccaattcg gcgaaattat caaagcgaaa 540  
 ggcgtggacg gactgattgc cgagttgaag gctaaaaacg gcagcaagta a 591

<210> 350  
 <211> 196  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 350  
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 1 5 10 15

Ile Gly Met Ala Phe Ala Ala Pro Ala Asp Ala Val Asn Gln Ile Arg  
           20                          25                          30  
 Gln Asn Ala Thr Gln Val Leu Ser Ile Leu Lys Ser Gly Asp Ala Asn  
           35                          40                          45  
 Thr Ala Arg Gln Lys Ala Glu Ala Tyr Ala Ile Pro Tyr Phe Asp Phe  
           50                          55                          60  
 Gln Arg Met Thr Ala Leu Ala Val Gly Asn Pro Trp Arg Thr Ala Ser  
           65                          70                          75                          80  
 Asp Ala Gln Lys Gln Ala Leu Ala Lys Glu Phe Gln Thr Leu Leu Ile  
                           85                          90                          95  
 Arg Thr Tyr Ser Gly Thr Met Leu Lys Leu Lys Asn Ala Asn Val Asn  
           100                          105                          110  
 Val Lys Asp Asn Pro Ile Val Asn Lys Gly Gly Lys Glu Ile Ile Val  
           115                          120                          125  
 Arg Ala Glu Val Gly Val Pro Gly Gln Lys Pro Val Asn Met Asp Phe  
           130                          135                          140  
 Thr Thr Tyr Gln Ser Gly Gly Lys Tyr Arg Thr Tyr Asn Val Ala Ile  
           145                          150                          155                          160  
 Glu Gly Ala Ser Leu Val Thr Val Tyr Arg Asn Gln Phe Gly Glu Ile  
                           165                          170                          175  
 Ile Lys Ala Lys Gly Val Asp Gly Leu Ile Ala Glu Leu Lys Ala Lys  
           180                          185                          190  
 Asn Gly Ser Lys  
           195

<210> 351  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
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 <222> (1)..(8)  
 <223> N= Unknown

<400> 351  
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- 8

<210> 352  
 <211> 196  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 352  
 Val Lys Lys Ser Ser Phe Ile Ser Ala Leu Gly Ile Gly Ile Leu Ser



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Gln Asn Ala Thr Gln Val Leu Thr Ile Leu Lys Ser Gly Asp Ala Ala	35	40	45
Ser Ala Arg Pro Lys Ala Glu Ala Tyr Ala Val Pro Tyr Phe Asp Phe	50	55	60
Gln Arg Met Thr Ala Leu Ala Val Gly Asn Pro Trp Arg Thr Ala Ser	65	70	75
Asp Ala Gln Lys Gln Ala Leu Ala Lys Glu Phe Gln Thr Leu Leu Ile	85	90	95
Arg Thr Tyr Ser Gly Thr Met Leu Lys Phe Lys Asn Ala Thr Val Asn	100	105	110
Val Lys Asp Asn Pro Ile Val Asn Lys Gly Gly Lys Glu Ile Val Val	115	120	125
Arg Ala Glu Val Gly Ile Pro Gly Gln Lys Pro Val Asn Met Asp Phe	130	135	140
Thr Thr Tyr Gln Ser Gly Gly Lys Tyr Arg Thr Tyr Asn Val Ala Ile	145	150	155
Glu Gly Thr Ser Leu Val Thr Val Tyr Arg Asn Gln Phe Gly Glu Ile	165	170	175
Ile Lys Ala Lys Gly Ile Asp Gly Leu Ile Ala Glu Leu Lys Ala Lys	180	185	190

Asn Gly Gly Lys  
195

<210> 353  
<211> 591  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 353						
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atcctcaaaa	gcggcgacgc	ggcttctgca	cgcccaaaag	ccgaagccta	tgcggttccc	180
tatttcgatt	tccaacgtat	gaccgcattg	gcggtcggca	acccttggcg	taccgcgtcc	240
gacgcgcaaa	aacaagcgtt	ggccaaagaa	tttcaaacc	tgctgatccg	cacctattcc	300
ggcacgatgc	tgaaattcaa	aaacgcgacc	gtcaacgtca	aagacaatcc	catcgtcaat	360
aaggcgcgca	aggaaatcgt	cgtccgtgcc	gaagtcggca	tccccgggtca	gaagcccgtc	420
aatatggact	ttaccaccta	ccaaagcggc	ggcaaatacc	gtacctacaa	cgtcgccatc	480
gaaggcacga	gcctggttac	cgtgtaccgc	aaccaattcg	gcgaaatcat	caaagccaaa	540
ggcatcgcagc	ggctgattgc	cgagttgaaa	gccaaaaacg	gcggcaaata	a	591

<210> 354

<211> 196  
<212> PRT  
<213> *Neisseria gonorrhoeae*

<400> 354

Met Lys Lys Ser Ser Phe Ile Ser Ala Leu Gly Ile Gly Ile Leu Ser  
1 5 10 15  
Ile Gly Met Ala Phe Ala Ser Pro Ala Asp Ala Val Gly Gln Ile Arg  
20 25 30  
Gln Asn Ala Thr Gln Val Leu Thr Ile Leu Lys Ser Gly Asp Ala Ala  
35 40 45  
Ser Ala Arg Pro Lys Ala Glu Ala Tyr Ala Val Pro Tyr Phe Asp Phe  
50 55 60  
Gln Arg Met Thr Ala Leu Ala Val Gly Asn Pro Trp Arg Thr Ala Ser  
65 70 75 80  
Asp Ala Gln Lys Gln Ala Leu Ala Lys Glu Phe Gln Thr Leu Leu Ile  
85 90 95  
Arg Thr Tyr Ser Gly Thr Met Leu Lys Phe Lys Asn Ala Thr Val Asn  
100 105 110  
Val Lys Asp Asn Pro Ile Val Asn Lys Gly Gly Lys Glu Ile Val Val  
115 120 125  
Arg Ala Glu Val Gly Ile Pro Gly Gln Lys Pro Val Asn Met Asp Phe  
130 135 140  
Thr Thr Tyr Gln Ser Gly Gly Lys Tyr Arg Thr Tyr Asn Val Ala Ile  
145 150 155 160  
Glu Gly Thr Ser Leu Val Thr Val Tyr Arg Asn Gln Phe Gly Glu Ile  
165 170 175  
Ile Lys Ala Lys Gly Ile Asp Gly Leu Ile Ala Glu Leu Lys Ala Lys  
180 185 190  
Asn Gly Gly Lys  
195

<210> 355  
<211> 480  
<212> DNA  
<213> *Neisseria meningitidis*

<220>  
<221> misc\_feature  
<222> (138)..(162)  
<223> N= Unknown

<400> 355

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60

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tcaaaataca	gttttggnnn	nnnnnnnnnn	nnnnnnnnnn	nngccataaa	aagcaaaggg	180
atggacattt	ttgccgtcat	cgaccatcag	gaagccgcac	gccgaaacgg	cttaacgatg	240
cagccggcaa	aagtcacgt	cttcggcacg	cccaaagccg	gcacgccgct	gatgggcaaa	300
gaccccgct	tcgccctgca	actgccccta	cgcgtcctcg	ttaccgaaac	ggacggcaaa	360
gtacgcgccg	cctataccga	tacgcgcgcc	ctcatcgccg	gcagccgcac	cggtttcgac	420
gaagtggcaa	acactttggc	aaacgccgaa	aaactgatac	aaaaaacctg	aggcgaataa	480

<210> 356  
 <211> 159  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (47)..(54)  
 <223> Xaa= any amino acid

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 20 25 30  
 Ala Met Ile Thr His Thr Leu Ile Ser Lys Tyr Ser Phe Gly Xaa Xaa  
 35 40 45  
 Xaa Xaa Xaa Xaa Xaa Xaa Ala Ile Lys Ser Lys Gly Met Asp Ile Phe  
 50 55 60  
 Ala Val Ile Asp His Gln Glu Ala Ala Arg Arg Asn Gly Leu Thr Met  
 65 70 75 80  
 Gln Pro Ala Lys Val Ile Val Phe Gly Thr Pro Lys Ala Gly Thr Pro  
 85 90 95  
 Leu Met Val Lys Asp Pro Ala Phe Ala Leu Gln Leu Pro Leu Arg Val  
 100 105 110  
 Leu Val Thr Glu Thr Asp Gly Lys Val Arg Ala Ala Tyr Thr Asp Thr  
 115 120 125  
 Arg Ala Leu Ile Ala Gly Ser Arg Ile Gly Phe Asp Glu Val Ala Asn  
 130 135 140  
 Thr Leu Ala Asn Ala Glu Lys Leu Ile Gln Lys Thr Val Gly Glu  
 145 150 155

<210> 357  
 <211> 480  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 357  
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tcaaaataca	gttttgacga	aaccgtcagc	cgccttgaaa	ccgccataaa	aagcaaaggg	180
atggacattt	ttgccgtcat	cgaccatcag	gaagccgcc	gccgaaacgg	cttaacgatg	240
cagccggcaa	aagtcatcgt	cttcgggcag	cccaaagccg	gcacgccgct	gatggtcaaa	300
gacccgcct	tgccttcga	actgccccat	cgcgtcctcg	ttaccgaaac	ggagggcaaa	360
gtacgcgcgc	cctataccga	tacgcgcgcc	ctcatcgccg	gcagccgcac	cggtttcgac	420
gaagtggcaa	acactttggc	aaacgccgaa	aaactgatac	aaaaaacctg	aggcgaataa	480

<400> 358

Thr Ala Ser Ala His Pro Ala Ser Glu Pro Ser Thr Gln Asn Glu Thr  
20 25 30

Val Ser Arg Leu Glu Thr Ala Ile Lys Ser Lys Gly Met Asp Ile Phe  
50 55 60

Gln Pro Ala Lys Val Ile Val Phe Gly Thr Pro Lys Ala Gly Thr Pro  
85 90 95

Leu Val Thr Glu Thr Asp Gly Lys Val Arg Ala Ala Tyr Thr Asp Thr  
115 120 125

Thr Leu Ala Asn Ala Glu Lys Leu Ile Gln Lys Thr Val Gly Glu  
145 150 155

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<220>
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<222> (5) .. (5)
<223> N= Unknown
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<222> (23)..(23)

<223> N= Unknown

<220>

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<222> (26)..(26)

<223> N= Unknown

<220>

<221> misc\_feature

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<223> N= Unknown

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<222> (337)..(337)

<223> N= Unknown

<400> 359

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tcaaaatata	gttttgacga	aaccgtcagc	cgccttgaaa	ccgccataaa	aagcaaaggg	180
atggacattt	ttgccgtcat	cgaccatcag	gaagccgccc	gccgaaacgg	cttaacgatg	240
cagccggcaa	aagtcatcgt	cttcggcacg	cccaaagccg	gtacgcgcgt	gatgggtcaa	300
gaccccgctt	tcgccctgca	actgcccctg	cgcgtcntcg	ttaccgaaac	ggacggcaaa	360
gtacgcgcgg	cctataccga	tacgcgcgcc	ctcatcgccg	gcagccgcat	cggtttcgac	420
gaagtggcaa	acactttggc	aaacgccgaa	aaactgatac	aaaaaaccat	aggcgaataa	480

<210> 360

<211> 159

<212> PRT

<213> Neisseria meningitidis

<220>

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<222> (2)..(2)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (8)..(9)

<223> Xaa= any amino acid

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<222> (113)..(113)

<223> Xaa= any amino acid

<400> 360

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1				5					10					15	

Thr Ala Ser Xaa His Pro Ala Ser Glu Pro Gln Thr Gln Asn Glu Thr  
                   20                  25                  30  
 Ala Met Thr Thr His Thr Leu Thr Ser Lys Tyr Ser Phe Asp Glu Thr  
                   35                  40                  45  
 Val Ser Arg Leu Glu Thr Ala Ile Lys Ser Lys Gly Met Asp Ile Phe  
                   50                  55                  60  
 Ala Val Ile Asp His Gln Glu Ala Ala Arg Arg Asn Gly Leu Thr Met  
                   65                  70                  75                  80  
 Gln Pro Ala Lys Val Ile Val Phe Gly Thr Pro Lys Ala Gly Thr Pro  
                   85                  90                  95  
 Leu Met Val Lys Asp Pro Ala Phe Ala Leu Gln Leu Pro Leu Arg Val  
                   100                  105                  110  
 Xaa Val Thr Glu Thr Asp Gly Lys Val Arg Ala Ala Tyr Thr Asp Thr  
                   115                  120                  125  
 Arg Ala Leu Ile Ala Gly Ser Arg Ile Gly Phe Asp Glu Val Ala Asn  
                   130                  135                  140  
 Thr Leu Ala Asn Ala Glu Lys Leu Ile Gln Lys Thr Ile Gly Glu  
                   145                  150                  155

<210> 361  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 361  
 nnnnnnnnn

8

<210> 362  
 <211> 159  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 362  
 Met Lys His Ile Leu Pro Pro Ile Ala Ala Ser Ala Phe Cys Ile Ser  
 1                  5                  10                  15  
 Thr Ala Ser Ala His Pro Ala Gly Lys Pro Pro Thr Gln Asn Glu Thr  
                   20                  25                  30  
 Ala Met Thr Thr His Thr Leu Thr Ser Lys Tyr Ser Phe Asp Glu Thr  
                   35                  40                  45  
 Val Ser Arg Leu Glu Thr Ala Ile Lys Ser Lys Gly Met Asp Ile Phe

50

55

60

Ala Val Ile Asp His Gln Glu Ala Ala Arg Arg Asn Gly Leu Thr Met  
65 70 75 80

Gln Pro Ala Lys Val Ile Val Phe Gly Thr Pro Lys Ala Gly Thr Pro  
85 90 95

Leu Met Val Lys Asp Pro Ala Phe Ala Leu Gln Leu Pro Leu Arg Val  
100 105 110

Leu Val Thr Glu Thr Asp Gly Lys Val Arg Thr Ala Tyr Thr Asp Thr  
115 120 125

Arg Ala Leu Ile Val Gly Ser Arg Ile Ser Phe Asp Glu Val Ala Asn  
130 135 140

Thr Leu Ala Asn Ala Glu Lys Leu Ile Gln Lys Thr Val Gly Glu  
145 150 155

<210> 363

<211> 480

<212> DNA

<213> Neisseria gonorrhoeae

<400> 363

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caccctgccg	gcaaaccgcc	cacccaaaac	gaaaccgcta	tgaccacgca	caccctcacc	120
tcgaaatata	gttttgacga	aaccgtcagc	cgccttgaaa	ccgccataaa	aagcaaaggg	180
atggacattt	ttgccgtcat	cgaccatcag	gaagcggcac	gccgaaacgg	cctgaccatg	240
cagccggcaa	aagtcacgt	cttcggcacg	cccaaggccg	gtacgccgct	gatgggtcaaa	300
gaccccgct	tcgccctgca	actgcccctg	cgcgtcctcg	ttaccgaaac	ggacggcaaa	360
gtacgcaccg	cctataccga	tacgcgcgcc	ctcatcgctg	gcagccgcat	cagtttcgac	420
gaagtggcaa	acactttggc	aaacgccgaa	aaactgatac	aaaaaaccgt	aggcgaataa	480

<210> 364

<211> 159

<212> PRT

<213> Neisseria gonorrhoeae

<400> 364

Met Lys His Ile Leu Pro Leu Ile Ala Ala Ser Ala Leu Cys Ile Ser  
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Thr Ala Ser Ala His Pro Ala Gly Lys Pro Pro Thr Gln Asn Glu Thr  
20 25 30

Ala Met Thr Thr His Thr Leu Thr Ser Lys Tyr Ser Phe Asp Glu Thr  
35 40 45

Val Ser Arg Leu Glu Thr Ala Ile Lys Ser Lys Gly Met Asp Ile Phe  
50 55 60

Ala Val Ile Asp His Gln Glu Ala Ala Arg Arg Asn Gly Leu Thr Met  
65 70 75 80

Gln Pro Ala Lys Val Ile Val Phe Gly Thr Pro Lys Ala Gly Thr Pro  
85 90 95

Leu Met Val Lys Asp Pro Ala Phe Ala Leu Gln Leu Pro Leu Arg Val  
100 105 110

Leu Val Thr Glu Thr Asp Gly Lys Val Arg Thr Ala Tyr Thr Asp Thr  
115 120 125

Arg Ala Leu Ile Val Gly Ser Arg Ile Ser Phe Asp Glu Val Ala Asn  
130 135 140

Thr Leu Ala Asn Ala Glu Lys Leu Ile Gln Lys Thr Val Gly Glu  
145 150 155

<210> 365

<211> 597

<212> DNA

<213> Neisseria meningitidis

<400> 365

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accgacggcg	ggcagctttc	catcagcagc	cgcttccaaa	ccgagctgcc	cgaccagctc	180
caacaggcgt	tgcgcggggg	cgtgccgctc	aactttacct	taagctggca	gctttccgcc	240
ccgataatcg	cttcttatcg	gtttaaattg	gggcaactga	ttggcgatga	cgacaatatt	300
gactacaaac	tgagtttcca	tccgctgacc	aaacgctacc	gcgttaccgt	cggcgcgttt	360
tcgacagact	acgacacctt	ggatgcggca	ttgcgcgcga	ccggcgcggt	tgccaactgg	420
aaagtccctga	acaaaggcgc	gctgtccggt	gcggaagcag	gggaaaccaa	ggcggaaaac	480
cgcttgacgc	tgtccacttc	aaaactgccc	aagccttttc	aaatcaatgc	attgacttct	540
caaaactggc	atttggattc	gggttggaaa	cctctaaaca	tcatcgggaa	caaataa	597

<210> 366

<211> 198

<212> PRT

<213> Neisseria meningitidis

<400> 366

Met Ala Phe Ile Thr Arg Leu Phe Lys Ser Ser Lys Trp Leu Ile Val  
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Pro Leu Met Leu Pro Ala Phe Gln Asn Val Ala Ala Glu Gly Ile Asp  
20 25 30

Val Ser Arg Ala Glu Ala Arg Ile Thr Asp Gly Gly Gln Leu Ser Ile  
35 40 45

Ser Ser Arg Phe Gln Thr Glu Leu Pro Asp Gln Leu Gln Gln Ala Leu  
50 55 60

Arg Arg Gly Val Pro Leu Asn Phe Thr Leu Ser Trp Gln Leu Ser Ala  
65 70 75 80

Pro Ile Ile Ala Ser Tyr Arg Phe Lys Leu Gly Gln Leu Ile Gly Asp  
85 90 95



Asp Asp Asn Ile Asp Tyr Lys Leu Ser Phe His Pro Leu Thr Lys Arg  
 100 105 110  
 Tyr Arg Val Thr Val Gly Ala Phe Ser Thr Asp Tyr Asp Thr Leu Asp  
 115 120 125  
 Ala Ala Leu Arg Ala Thr Gly Ala Val Ala Asn Trp Lys Val Leu Asn  
 130 135 140  
 Lys Gly Ala Leu Ser Gly Ala Glu Ala Gly Glu Thr Lys Ala Glu Ile  
 145 150 155 160  
 Arg Leu Thr Leu Ser Thr Ser Lys Leu Pro Lys Pro Phe Gln Ile Asn  
 165 170 175  
 Ala Leu Thr Ser Gln Asn Trp His Leu Asp Ser Gly Trp Lys Pro Leu  
 180 185 190  
 Asn Ile Ile Gly Asn Lys  
 195

<210> 367  
 <211> 597  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 367  
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 accgacggcg ggcagctttc catcagcagc cgcttccaaa ccgagctgcc cgaccagctc 180  
 caacaggcgt tgcgcggggg cgtgccgctc aactttacct taagctggca gctttccgcc 240  
 ccgataatcg cttcttatcg gtttaaattg gggcaactga ttggcgatga cgacaatatt 300  
 gactacaaac tgagtttcca tccgctgacc aaccgctacc gcgttaccgt cggcgcgctt 360  
 tcgacagact acgacacctt ggatgcggca ttgcgcgcga ccggcgcggt tgccaactgg 420  
 aaagtccctga acaaaggcgc gctgtccggt gcggaagcag gggaaaccaa ggcggaaatc 480  
 cgctgacgc tgtccacttc aaaactgccc aagccttttc aaatcaatgc attgacttct 540  
 caaaactggc atttggattc gggttggaac cctctaaca tcatcgggaa caaataa 597

<210> 368  
 <211> 198  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 368  
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 20 25 30  
 Val Ser Arg Ala Glu Ala Arg Ile Thr Asp Gly Gly Gln Leu Ser Ile  
 35 40 45  
 Ser Ser Arg Phe Gln Thr Glu Leu Pro Asp Gln Leu Gln Gln Ala Leu  
 50 55 60

Arg	Arg	Gly	Val	Pro	Leu	Asn	Phe	Thr	Leu	Ser	Trp	Gln	Leu	Ser	Ala
65					70					75					80
Pro	Ile	Ile	Ala	Ser	Tyr	Arg	Phe	Lys	Leu	Gly	Gln	Leu	Ile	Gly	Asp
				85					90					95	
Asp	Asp	Asn	Ile	Asp	Tyr	Lys	Leu	Ser	Phe	His	Pro	Leu	Thr	Asn	Arg
			100					105					110		
Tyr	Arg	Val	Thr	Val	Gly	Ala	Phe	Ser	Thr	Asp	Tyr	Asp	Thr	Leu	Asp
		115					120					125			
Ala	Ala	Leu	Arg	Ala	Thr	Gly	Ala	Val	Ala	Asn	Trp	Lys	Val	Leu	Asn
	130					135					140				
Lys	Gly	Ala	Leu	Ser	Gly	Ala	Glu	Ala	Gly	Glu	Thr	Lys	Ala	Glu	Ile
145					150					155					160
Arg	Leu	Thr	Leu	Ser	Thr	Ser	Lys	Leu	Pro	Lys	Pro	Phe	Gln	Ile	Asn
				165					170					175	
Ala	Leu	Thr	Ser	Gln	Asn	Trp	His	Leu	Asp	Ser	Gly	Trp	Lys	Pro	Leu
			180					185					190		
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			195												

<210> 369  
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 <213> Neisseria meningitidis

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 <223> N= Unknown

<220>  
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 <223> N= Unknown

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 ataancgacg gcgggcagct ttccatnagn agccgcttcc aaaccgagct gcccgaccag 180  
 ctccaannng cgnngngccg gggcgtgncg ctcaactnta ccttaagntg gcagctttcc 240  
 gccccgataa tcgcttctta tcggtttnaa ttggggcaac tgattggcga tgacgacnat 300  
 attgactaca aactgagttt ccatccgctg accaaccgct accgcgttac cgtcggcgcg 360  
 ttttcgacag antacgacac cttggatgcg gcattgcgcg cgaccggcgc ggttgccaac 420  
 tggaaagtcc tgaacaaagg cgcgctgtcc ggtgcggaag caggggaaac caaggcggaa 480  
 atccgcctga cgctgtccac ttcaaaaactg cccaagcctt ttcâaatcaa tgcattgact 540  
 tctcaaaaact ggcatttggg ttcgggttgg aaacctctaa acatcatcgg gaacaaataa 600

<210> 370  
 <211> 199  
 <212> PRT  
 <213> Neisseria meningitidis

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 <223> Xaa= any amino acid

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<220>  
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 <223> Xaa= any amino acid

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 <223> Xaa= any amino acid

<400> 370  
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 20 25 30  
 Asp Val Ser Arg Ala Glu Ala Arg Ile Xaa Asp Gly Gly Gln Leu Ser  
 35 40 45  
 Xaa Xaa Ser Arg Phe Gln Thr Glu Leu Pro Asp Gln Leu Gln Xaa Ala

50

55

60

Xaa Xaa Arg Gly Val Xaa Leu Asn Xaa Thr Leu Xaa Trp Gln Leu Ser  
65 70 75 80

Ala Pro Ile Ile Ala Ser Tyr Arg Phe Xaa Leu Gly Gln Leu Ile Gly  
85 90 95

Asp Asp Asp Xaa Ile Asp Tyr Lys Leu Ser Phe His Pro Leu Thr Asn  
100 105 110

Arg Tyr Arg Val Thr Val Gly Ala Phe Ser Thr Xaa Tyr Asp Thr Leu  
115 120 125

Asp Ala Ala Leu Arg Ala Thr Gly Ala Val Ala Asn Trp Lys Val Leu  
130 135 140

Asn Lys Gly Ala Leu Ser Gly Ala Glu Ala Gly Glu Thr Lys Ala Glu  
145 150 155 160

Ile Arg Leu Thr Leu Ser Thr Ser Lys Leu Pro Lys Pro Phe Gln Ile  
165 170 175

Asn Ala Leu Thr Ser Gln Asn Trp His Leu Asp Ser Gly Trp Lys Pro  
180 185 190

Leu Asn Ile Ile Gly Asn Lys  
195

&lt;210&gt; 371

&lt;211&gt; 600

&lt;212&gt; DNA

<213> *Neisseria gonorrhoeae*

&lt;400&gt; 371

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ataaccgacg	gcgggcggct	ttccatcagc	agccgcttcc	aaaccgagct	gcccgaccag	180
ctccaacagg	cgttgcgccg	gggcgtaccg	ctcaacttta	ccttaagctg	gcagctttcc	240
gccccgacaa	tcgcttctta	tcggtttaaa	ttggggcaac	tgattggcga	tgacgacaat	300
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ttttccaccg	attacgacac	tttggatgcg	gcattgcgcg	cgaccggcgc	ggttgccaac	420
tggaagtcc	tgaacaaagg	cgcgttgctc	ggtgcggaag	caggggaaac	caaggcggaa	480
atccgcctga	cgctgtccac	ttcaaaactg	cccaagcctt	tccaaatcaa	cgcattgact	540
tctcaaaact	ggcatttgga	ttcgggttgg	aaacctctaa	acatcatcgg	gaacaaataa	600

&lt;210&gt; 372

&lt;211&gt; 199

&lt;212&gt; PRT

<213> *Neisseria gonorrhoeae*

&lt;400&gt; 372

Met Ala Phe Ile Thr Arg Leu Phe Lys Ser Ile Lys Gln Trp Leu Val  
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Leu Leu Pro Ile Leu Ser Val Leu Pro Asp Ala Ala Ala Glu Gly Ile

20

25

30

Ala Ala Thr Arg Ala Glu Ala Arg Ile Thr Asp Gly Gly Arg Leu Ser  
35 40 45

Ile Ser Ser Arg Phe Gln Thr Glu Leu Pro Asp Gln Leu Gln Gln Ala  
50 55 60

Leu Arg Arg Gly Val Pro Leu Asn Phe Thr Leu Ser Trp Gln Leu Ser  
65 70 75 80

Ala Pro Thr Ile Ala Ser Tyr Arg Phe Lys Leu Gly Gln Leu Ile Gly  
85 90 95

Asp Asp Asp Asn Ile Asp Tyr Lys Leu Ser Phe His Pro Leu Thr Asn  
100 105 110

Arg Tyr Arg Val Thr Val Gly Ala Phe Ser Thr Asp Tyr Asp Thr Leu  
115 120 125

Asp Ala Ala Leu Arg Ala Thr Gly Ala Val Ala Asn Trp Lys Val Leu  
130 135 140

Asn Lys Gly Ala Leu Ser Gly Ala Glu Ala Gly Glu Thr Lys Ala Glu  
145 150 155 160

Ile Arg Leu Thr Leu Ser Thr Ser Lys Leu Pro Lys Pro Phe Gln Ile  
165 170 175

Asn Ala Leu Thr Ser Gln Asn Trp His Leu Asp Ser Gly Trp Lys Pro  
180 185 190

Leu Asn Ile Ile Gly Asn Lys  
195

<210> 373  
<211> 1419  
<212> DNA  
<213> Neisseria meningitidis

<400> 373

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tgatgcagac	ggcggcgggg	ctgacggtgt	cggtgttgtg	cctcgggctg	gatcaggcat	180
acgtccgcga	atactatgcc	accgccgaca	aagacacctt	gttcaaaacc	ctgttcctgc	240
cgcgctgct	gtctgccgcc	gcgatagccg	ccctgctgct	tccccgccg	tccctgccgt	300
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cgcaccggtt	tcgcccgcgc	tcctgcaccg	ggggtgcgct	acggcatacc	gatcgactg	660
agcagcatcg	cctattgggg	gctggcatcc	gccgaccgtt	tgttcctgaa	aaaatatgcc	720
ggcctggaac	agctcggcgt	ttattcgatg	ggtatttcgt	tcggcggggc	ggcattattg	780
ttccaaagca	tcttttcaac	ggtctggaca	ccgtatatatt	tccgcgcaat	cgaagaaaac	840
gccccgcccc	ctcgcctctc	ggcaacggca	gaatccgcgc	ccgcctgct	tgccctccgc	900

ctctgctgac	cggcattttc	tcgccccttg	cctccctect	gctgcccggaa	aactacgccg	960
ccgtccggtt	tatcgtcgta	tcgtgtatgt	gccgcgctg	ttttgcacgc	tggcggaaat	1020
cagcggcatc	ggtttgaacg	tcgttcgcaa	aacgcgcgcg	atcgcgctcg	ccaccttggg	1080
cgcgctggcg	gcaaacctgc	tgtgtctggg	gcttgaccgt	gccgtaccgg	cgaggccgcc	1140
ggcgcggcgg	ttgcctgtgc	cgcctcatte	tggctgtttt	ttgccttcaa	gaccgaaaagc	1200
tcttgccgcc	tgtggcagcc	gctcaaacgc	ctgccgcttt	atctgcacac	attgttctgc	1260
ctgacctcct	cggcggccta	cacctgcttc	ggcacgccgg	caaactatcc	cctgtttgcc	1320
ggcgtatggg	cggcatatct	ggcaggctgc	atcctgcgcc	accggaaaga	tttgcacaaa	1380
ctgtttcatt	atttgaaaaa	acaaggtttc	ccattatga			1419

<210> 374  
 <211> 474  
 <212> PRT  
 <213> Neisseria meningitidis

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<220>  
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 <223> Xaa= any amino acid

<220>  
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<400> 374  
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 20 25 30  
 Ala Asp Asp Ile Gly Arg Ile Val Leu Met Gln Thr Ala Ala Gly Leu  
 35 40 45  
 Thr Val Ser Val Leu Cys Leu Gly Leu Asp Gln Ala Tyr Val Arg Glu

50					55					60					
Tyr	Tyr	Ala	Thr	Ala	Asp	Lys	Asp	Thr	Leu	Phe	Lys	Thr	Leu	Phe	Leu
65					70					75					80
Pro	Pro	Leu	Leu	Ser	Ala	Ala	Ala	Ile	Ala	Ala	Leu	Leu	Leu	Ser	Arg
				85					90					95	
Pro	Ser	Leu	Pro	Ser	Glu	Ile	Leu	Phe	Ser	Leu	Asp	Asp	Ala	Ala	Ala
			100					105					110		
Gly	Ile	Gly	Leu	Val	Leu	Phe	Glu	Leu	Ser	Phe	Leu	Pro	Ile	Arg	Phe
		115					120					125			
Leu	Leu	Leu	Val	Leu	Arg	Met	Glu	Gly	Arg	Ala	Leu	Ala	Phe	Ser	Ser
		130				135					140				
Ala	Gln	Leu	Val	Pro	Lys	Leu	Ala	Ile	Leu	Leu	Leu	Xaa	Pro	Leu	Thr
145					150					155					160
Val	Gly	Leu	Leu	His	Phe	Pro	Ala	Asn	Thr	Ala	Val	Leu	Thr	Ala	Val
				165					170					175	
Tyr	Ala	Leu	Ala	Asn	Leu	Ala	Ala	Ala	Ala	Phe	Leu	Leu	Phe	Gln	Asn
			180					185					190		
Arg	Cys	Arg	Leu	Lys	Ala	Val	Arg	His	Ala	Pro	Phe	Ser	Pro	Ala	Val
		195					200					205			
Leu	His	Arg	Gly	Xaa	Arg	Tyr	Gly	Ile	Pro	Ile	Ala	Leu	Ser	Ser	Ile
	210					215					220				
Ala	Tyr	Trp	Gly	Leu	Ala	Ser	Ala	Asp	Arg	Leu	Phe	Leu	Lys	Lys	Tyr
225					230					235					240
Ala	Gly	Leu	Glu	Gln	Leu	Gly	Val	Tyr	Ser	Met	Gly	Ile	Ser	Phe	Gly
				245					250					255	
Gly	Ala	Ala	Leu	Leu	Phe	Gln	Ser	Ile	Phe	Ser	Thr	Val	Trp	Thr	Pro
			260					265					270		
Tyr	Ile	Phe	Arg	Ala	Ile	Glu	Glu	Asn	Ala	Pro	Pro	Ala	Arg	Leu	Ser
		275					280					285			
Ala	Thr	Ala	Glu	Ser	Ala	Ala	Ala	Leu	Leu	Ala	Ser	Ala	Leu	Cys	Xaa
	290					295					300				
Thr	Gly	Ile	Phe	Ser	Pro	Leu	Ala	Ser	Leu	Leu	Leu	Pro	Glu	Asn	Tyr
305					310					315					320
Ala	Ala	Val	Arg	Phe	Ile	Val	Val	Ser	Cys	Met	Xaa	Pro	Pro	Leu	Phe
				325					330					335	
Cys	Thr	Leu	Ala	Glu	Ile	Ser	Gly	Ile	Gly	Leu	Asn	Val	Val	Arg	Lys
			340					345					350		



Thr Arg Pro Ile Ala Leu Ala Thr Leu Gly Ala Leu Ala Ala Asn Leu  
355 360 365

Leu Leu Leu Gly Leu Asp Arg Ala Val Pro Ala Arg Pro Xaa Gly Ala  
370 375 380

Ala Val Ala Cys Ala Ala Ser Phe Trp Leu Phe Phe Ala Phe Lys Thr  
385 390 395 400

Glu Ser Ser Cys Arg Leu Trp Gln Pro Leu Lys Arg Leu Pro Leu Tyr  
405 410 415

Leu His Thr Leu Phe Cys Leu Thr Ser Ser Ala Ala Tyr Thr Cys Phe  
420 425 430

Gly Thr Pro Ala Asn Tyr Pro Leu Phe Ala Gly Val Trp Ala Ala Tyr  
435 440 445

Leu Ala Gly Cys Ile Leu Arg His Arg Lys Asp Leu His Lys Leu Phe  
450 455 460

His Tyr Leu Lys Lys Gln Gly Phe Pro Leu  
465 470

<210> 375

<211> 1422

<212> DNA

<213> Neisseria meningitidis

<400> 375

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ctgatgcaga	cgggcgcggg	gctgacgggtg	tgggtgttgt	gcctcgggct	ggatcaggca	180
tacgtccgcg	aatactatgc	caccgcccac	aaagacacct	tgttcaaaac	cctgttcctg	240
cgccgctgc	tgtctgcgcg	cgcatagacc	gccctgctgc	tttccgcgcc	gtccctgccg	300
tctgaaatcc	tgttttcact	cgacgatgcc	gccgcgggca	tgggctggt	gctgtttgaa	360
ctgagcttcc	tgcccatccg	ctttctctta	ctcgccatcc	tgctgctgct	gccgctgacg	420
gccttttctg	ccgcgcaact	cgtgcccgaag	ctcgccatcc	tgctgctgct	gccgctgacg	480
gtcgggctgc	tgcactttcc	agcgaacacc	gccgtcctga	ccgcggttta	cgcgctggca	540
aaccttgccg	ccgcgcgctt	tttgcgtgtt	caaaaccgat	gccgtctgaa	ggcgcgtccg	600
cacgcaccgt	tttcgcccgc	cgctcctgcac	cgggggctgc	gctacggcat	accgatcgca	660
ctgagcagca	tcgcctattg	ggggctggca	tccgccgacc	gtttgttcc	gaaaaaatat	720
gccggcctgg	aacagctcgg	cgtttatctg	atgggtat	cgttcggcgg	ggcggcatta	780
ttgttccaaa	gcacttttcc	aacgggtctg	acaccgtata	ttttccgcgc	aatcgaagaa	840
aacgccccgc	ccgcccgcct	ctcggcaacg	gcagaatccg	ccgcccgcct	gcttgccctcc	900
gccctctgcc	tgaccggcat	tttctcgccc	cttgccctcc	tctgctgccc	ggaaaactac	960
gccgcccgtcc	ggtttatcgt	cgtatcgtgt	atgctgcgcg	cgctgttttg	cacgctggcg	1020
gaaatcagcg	gcacggtttt	gaacgtcgtc	cgcaaaacgc	gcccgatcgc	gctcgccacc	1080
ttggggcgcg	tggcggcaaa	cctgctgctg	ctggggcttg	ccgtgccgtc	cggcggcgcg	1140
cgcggcgcgg	cggttgccctg	tgccgcctca	ttctggctgt	ttttgcctt	caagaccgaa	1200
agctcctgcc	gcctgtggca	gccgctcaaa	cgctgcgcgc	tttatctgca	cacattgttc	1260
tgcctgacct	cctcggcggc	ctacacctgc	ttcggcacgc	cggaacta	tcccctgttt	1320
gccggcggtat	ggcggcgata	tctggcaggc	tgcactctgc	gccaccggaa	agatttgcac	1380
aaactgtttc	attatttgaa	aaaacaaggt	ttcccattat	ga		1422

<210> 376

<211> 473  
<212> PRT  
<213> Neisseria meningitidis

<400> 376

Met	Asp	Thr	Lys	Glu	Ile	Leu	Gly	Tyr	Ala	Ala	Gly	Ser	Ile	Gly	Ser
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Ala	Val	Leu	Ala	Val	Ile	Ile	Leu	Pro	Leu	Leu	Ser	Trp	Tyr	Phe	Pro
			20					25					30		
Ala	Asp	Asp	Ile	Gly	Arg	Ile	Val	Leu	Met	Gln	Thr	Ala	Ala	Gly	Leu
			35				40					45			
Thr	Val	Ser	Val	Leu	Cys	Leu	Gly	Leu	Asp	Gln	Ala	Tyr	Val	Arg	Glu
	50					55					60				
Tyr	Tyr	Ala	Thr	Ala	Asp	Lys	Asp	Thr	Leu	Phe	Lys	Thr	Leu	Phe	Leu
65					70					75					80
Pro	Pro	Leu	Leu	Ser	Ala	Ala	Ala	Ile	Ala	Ala	Leu	Leu	Leu	Ser	Arg
				85					90					95	
Pro	Ser	Leu	Pro	Ser	Glu	Ile	Leu	Phe	Ser	Leu	Asp	Asp	Ala	Ala	Ala
			100					105					110		
Gly	Ile	Gly	Leu	Val	Leu	Phe	Glu	Leu	Ser	Phe	Leu	Pro	Ile	Arg	Phe
			115				120					125			
Leu	Leu	Leu	Val	Leu	Arg	Met	Glu	Gly	Arg	Ala	Leu	Ala	Phe	Ser	Ser
	130					135					140				
Ala	Gln	Leu	Val	Pro	Lys	Leu	Ala	Ile	Leu	Leu	Leu	Leu	Pro	Leu	Thr
145					150					155					160
Val	Gly	Leu	Leu	His	Phe	Pro	Ala	Asn	Thr	Ala	Val	Leu	Thr	Ala	Val
				165					170					175	
Tyr	Ala	Leu	Ala	Asn	Leu	Ala	Ala	Ala	Ala	Phe	Leu	Leu	Phe	Gln	Asn
			180					185					190		
Arg	Cys	Arg	Leu	Lys	Ala	Val	Arg	His	Ala	Pro	Phe	Ser	Pro	Ala	Val
			195				200					205			
Leu	His	Arg	Gly	Leu	Arg	Tyr	Gly	Ile	Pro	Ile	Ala	Leu	Ser	Ser	Ile
	210					215					220				
Ala	Tyr	Trp	Gly	Leu	Ala	Ser	Ala	Asp	Arg	Leu	Phe	Leu	Lys	Lys	Tyr
225				230						235					240
Ala	Gly	Leu	Glu	Gln	Leu	Gly	Val	Tyr	Ser	Met	Gly	Ile	Ser	Phe	Gly
				245					250					255	
Gly	Ala	Ala	Leu	Leu	Phe	Gln	Ser	Ile	Phe	Ser	Thr	Val	Trp	Thr	Pro
			260					265					270		

Tyr Ile Phe Arg Ala Ile Glu Glu Asn Ala Pro Pro Ala Arg Leu Ser  
 275 280 285  
 Ala Thr Ala Glu Ser Ala Ala Ala Leu Leu Ala Ser Ala Leu Cys Leu  
 290 295 300  
 Thr Gly Ile Phe Ser Pro Leu Ala Ser Leu Leu Leu Pro Glu Asn Tyr  
 305 310 315 320  
 Ala Ala Val Arg Phe Ile Val Val Ser Cys Met Leu Pro Pro Leu Phe  
 325 330 335  
 Cys Thr Leu Ala Glu Ile Ser Gly Ile Gly Leu Asn Val Val Arg Lys  
 340 345 350  
 Thr Arg Pro Ile Ala Leu Ala Thr Leu Gly Ala Leu Ala Ala Asn Leu  
 355 360 365  
 Leu Leu Leu Gly Leu Ala Val Pro Ser Gly Gly Ala Arg Gly Ala Ala  
 370 375 380  
 Val Ala Cys Ala Ala Ser Phe Trp Leu Phe Phe Ala Phe Lys Thr Glu  
 385 390 395 400  
 Ser Ser Cys Arg Leu Trp Gln Pro Leu Lys Arg Leu Pro Leu Tyr Leu  
 405 410 415  
 His Thr Leu Phe Cys Leu Thr Ser Ser Ala Ala Tyr Thr Cys Phe Gly  
 420 425 430  
 Thr Pro Ala Asn Tyr Pro Leu Phe Ala Gly Val Trp Ala Ala Tyr Leu  
 435 440 445  
 Ala Gly Cys Ile Leu Arg His Arg Lys Asp Leu His Lys Leu Phe His  
 450 455 460  
 Tyr Leu Lys Lys Gln Gly Phe Pro Leu  
 465 470

<210> 377  
 <211> 1422  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 377  
 atggacacaa aagaaatcct cggctacgcg gcaggctcga tcggcagcgc ggtttttagcc 60  
 gtcacatcatcc tgccgctgct gtcgtggtat ttccctgccg acgacatcgg acgcatcgtg 120  
 ctgatgcaga cggcggcggg gctgacgggtg tcggtgttgt gcctcgggct ggatcaggca 180  
 tacgtccgcg aatactatgc cgccgccgac aaagacactt tgttcaaaac cctgttctctg 240  
 ccgccgctgc tgtctgccgc cgcatagcc gccctgctgc tttcccgccc atccctgccg 300  
 tctgaaatcc tgttttcgct cgacgatgcc gccgccggca tcgggctggt gctgtttgaa 360  
 ctgagcttcc tgcccatccg ctttctctta ctggttttgc gtatggaagg acgcgccctt 420  
 gccttttcgt ccgcgcaact cgtgtccaag ctgcctatcc tgctgctgct gccgctgacg 480  
 gtcgggctgc tgcactttcc ggcaaacacc gccgtcctga ccgccgttta cgcgctggca 540  
 aaccttgccg ccgccgcctt tttgctgttt caaaaccgat gccgtctgaa ggccgtccgg 600  
 cgcgcacctg tttcatccgc cgtcctgcat cgcggcctgc gctacggcat accgatcgca 660

ctaagcagca	tcgcctattg	ggggctggca	tccgccgacc	gtttgttcc	gaaaaaatat	720
gccggcctag	aacagctcgg	cgtttattcg	atgggtat	cgttcggcgg	agcggcatta	780
ttgtttccaaa	gcattctttc	aacgggtctgg	acaccgtata	ttttccgcgc	aatcgaagca	840
aacgccccgc	ccgcccgcct	ctcgggcaacg	gcagaatccg	ccgccgccct	gcttgcctcc	900
gccctctgcc	tgaccggcat	tttctcgccc	ctcgccctcc	tctgtctgcc	ggaaaactac	960
gccgcgcgtc	ggtttatcgt	cgtatcgtgt	atgctgcctc	cgtgttttg	cacgctggta	1020
gaaatcagcg	gcacgggttt	gaacgtcgtc	cgaaaaacac	gcccgatcgc	gctcgccacc	1080
ttgggcgcgc	tggcggcaaa	cctgctgctg	ctggggcttg	ccgtaccgtc	cggcggcgcg	1140
cgcggcgcgg	cggttgccctg	tgcgcctca	ttttggctgt	ttttgtttt	caagaccgaa	1200
agctcctgcc	gcctgtggca	gccgctcaaa	cgcccgccgc	tttatatgca	cacattgttc	1260
tgccctggcct	cctcggcggc	ctacacctgc	tccggcactc	cggcaacta	ccccctgttt	1320
gccggcgat	gggcgggtata	tctggcaggc	tgcacctcgc	gccaccggaa	agatttgcac	1380
aaactgtttc	attatttgaa	aaaacaaggt	ttcccattat	ga		1422

<210> 378  
 <211> 473  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 378  
 Met Asp Thr Lys Glu Ile Leu Gly Tyr Ala Ala Gly Ser Ile Gly Ser  
 1 5 10 15  
 Ala Val Leu Ala Val Ile Ile Leu Pro Leu Leu Ser Trp Tyr Phe Pro  
 20 25 30  
 Ala Asp Asp Ile Gly Arg Ile Val Leu Met Gln Thr Ala Ala Gly Leu  
 35 40 45  
 Thr Val Ser Val Leu Cys Leu Gly Leu Asp Gln Ala Tyr Val Arg Glu  
 50 55 60  
 Tyr Tyr Ala Ala Ala Asp Lys Asp Thr Leu Phe Lys Thr Leu Phe Leu  
 65 70 75 80  
 Pro Pro Leu Leu Ser Ala Ala Ala Ile Ala Ala Leu Leu Leu Ser Arg  
 85 90 95  
 Pro Ser Leu Pro Ser Glu Ile Leu Phe Ser Leu Asp Asp Ala Ala Ala  
 100 105 110  
 Gly Ile Gly Leu Val Leu Phe Glu Leu Ser Phe Leu Pro Ile Arg Phe  
 115 120 125  
 Leu Leu Leu Val Leu Arg Met Glu Gly Arg Ala Leu Ala Phe Ser Ser  
 130 135 140  
 Ala Gln Leu Val Ser Lys Leu Ala Ile Leu Leu Leu Leu Pro Leu Thr  
 145 150 155 160  
 Val Gly Leu Leu His Phe Pro Ala Asn Thr Ala Val Leu Thr Ala Val  
 165 170 175  
 Tyr Ala Leu Ala Asn Leu Ala Ala Ala Ala Phe Leu Leu Phe Gln Asn  
 180 185 190

Arg Cys Arg Leu Lys Ala Val Arg Arg Ala Pro Phe Ser Ser Ala Val  
 195 200 205  
 Leu His Arg Gly Leu Arg Tyr Gly Ile Pro Ile Ala Leu Ser Ser Ile  
 210 215 220  
 Ala Tyr Trp Gly Leu Ala Ser Ala Asp Arg Leu Phe Leu Lys Lys Tyr  
 225 230 235 240  
 Ala Gly Leu Glu Gln Leu Gly Val Tyr Ser Met Gly Ile Ser Phe Gly  
 245 250 255  
 Gly Ala Ala Leu Leu Phe Gln Ser Ile Phe Ser Thr Val Trp Thr Pro  
 260 265 270  
 Tyr Ile Phe Arg Ala Ile Glu Ala Asn Ala Pro Pro Ala Arg Leu Ser  
 275 280 285  
 Ala Thr Ala Glu Ser Ala Ala Ala Leu Leu Ala Ser Ala Leu Cys Leu  
 290 295 300  
 Thr Gly Ile Phe Ser Pro Leu Ala Ser Leu Leu Leu Pro Glu Asn Tyr  
 305 310 315 320  
 Ala Ala Val Arg Phe Ile Val Val Ser Cys Met Leu Pro Pro Leu Phe  
 325 330 335  
 Cys Thr Leu Val Glu Ile Ser Gly Ile Gly Leu Asn Val Val Arg Lys  
 340 345 350  
 Thr Arg Pro Ile Ala Leu Ala Thr Leu Gly Ala Leu Ala Ala Asn Leu  
 355 360 365  
 Leu Leu Leu Gly Leu Ala Val Pro Ser Gly Gly Ala Arg Gly Ala Ala  
 370 375 380  
 Val Ala Cys Ala Ala Ser Phe Trp Leu Phe Phe Val Phe Lys Thr Glu  
 385 390 395 400  
 Ser Ser Cys Arg Leu Trp Gln Pro Leu Lys Arg Leu Pro Leu Tyr Met  
 405 410 415  
 His Thr Leu Phe Cys Leu Ala Ser Ser Ala Ala Tyr Thr Cys Phe Gly  
 420 425 430  
 Thr Pro Ala Asn Tyr Pro Leu Phe Ala Gly Val Trp Ala Val Tyr Leu  
 435 440 445  
 Ala Gly Cys Ile Leu Arg His Arg Lys Asp Leu His Lys Leu Phe His  
 450 455 460  
 Tyr Leu Lys Lys Gln Gly Phe Pro Leu  
 465 470

<210> 379

<211> 1422

<212> DNA  
 <213> Neisseria gonorrhoeae

<400> 379  
 atggacacaa aagaaatcct cggctacgcg gcaggctcga tcggcagcgc gggttttagcc 60  
 gtcacatcatc tgccgctgct gtcgtggtat ttccccgccg acgacatcgg gcgcatcgtg 120  
 ctgatgcaga cggcgccggg actgacggtg tcgggtattgt gcctcgggct ggatcaggca 180  
 tacgtccgcg aatactatgc cgccgccgac aaagacactt tggtcaaaac cctgttcctg 240  
 ccgcccgtgc tggttttcgct cgacgatgcc gcccgccgca tcgggctggt gctgtttgaa 300  
 tctgaaatcc tggttttcgct cgacgatgcc gcccgccgca tcgggctggt gctgtttgaa 360  
 ctgagcttcc tgcccatccg ctttctctta ctgggttttg gtatggaagg gcgcgccctt 420  
 gccttttcgt ccgcgcaact cgtgccccaa ctgcgccattc tgctgctggt gccgctgacg 480  
 gtcgggctgc tgcactttcc ggcgaacacc tccgtcctga ccgccgttta cgcgctggca 540  
 aaccttgccg ccgcgcgctt tttgctgttt caaaaccgat gccgtctgaa ggccgtccgg 600  
 cgcgcgcgct tttcgcccgcc cgtcctgcac cgggggctgc gctacggcat accgctcgca 660  
 ctgagcagcc ttgcctattg ggggctggca tccgcgcgacc gtttggttct gaaaaaatat 720  
 gcgggctctg aacagctcgg cgtttattcg atgggtatct cgttcggcgg ggccgcat 780  
 ttgctccaaa gcatcttttc aacggctcgg acaccgtata ttttcgctgc aatcgaagaa 840  
 aacgccacgc ccgcccgcct ctgcgcaacg gcagaatccg ccgcgcgctt gcttgccctc 900  
 gccctctgcc tgaccggaat tttctcgccc ctgcgctccc tctgctgcc ggaaaaactac 960  
 gccgcgctcc ggtttaccgt cgtatcgtgt atgctgccgc cgtgttttta cacgctgacc 1020  
 gaaatcagcg gcatcggttt gaacgtcgtc cgcaaaacgc gtccgatcgc gcttgccacc 1080  
 ttgggcgcgc tggcgccaaa cctgctgctg ctggggcttg ccgtaccgtc cggcggcacg 1140  
 cgcggcgccg cggttgccgt tgcgcctca ttctggttgt tttttgttt caagacagaa 1200  
 agctcctgcc gcctgtggca gccgtcaaa cgctgccgc tttatatgca cacattgttc 1260  
 tgcctggcct cctcgccggc ctacacctgc ttcggcacac cggcaacta cccctgttt 1320  
 gccggcgat gggcgccata tctggcaggc tgcacctgc gccaccgaa aaatttgac 1380  
 aaactgtttc attatttgaa aaaacaaggt ttcccattat ga 1422

<210> 380  
 <211> 473  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 380  
 Met Asp Thr Lys Glu Ile Leu Gly Tyr Ala Ala Gly Ser Ile Gly Ser  
 1 5 10 15  
 Ala Val Leu Ala Val Ile Ile Leu Pro Leu Leu Ser Trp Tyr Phe Pro  
 20 25 30  
 Ala Asp Asp Ile Gly Arg Ile Val Leu Met Gln Thr Ala Ala Gly Leu  
 35 40 45  
 Thr Val Ser Val Leu Cys Leu Gly Leu Asp Gln Ala Tyr Val Arg Glu  
 50 55 60  
 Tyr Tyr Ala Ala Ala Asp Lys Asp Thr Leu Phe Lys Thr Leu Phe Leu  
 65 70 75 80  
 Pro Pro Leu Leu Phe Ser Ala Ala Ile Ala Ala Leu Leu Leu Ser Arg  
 85 90 95  
 Pro Ser Leu Pro Ser Glu Ile Leu Phe Ser Leu Asp Asp Ala Ala Ala  
 100 105 110

Gly Ile Gly Leu Val Leu Phe Glu Leu Ser Phe Leu Pro Ile Arg Phe	115	120	125
Leu Leu Leu Val Leu Arg Met Glu Gly Arg Ala Leu Ala Phe Ser Ser	130	135	140
Ala Gln Leu Val Pro Lys Leu Ala Ile Leu Leu Leu Leu Pro Leu Thr	145	150	155
Val Gly Leu Leu His Phe Pro Ala Asn Thr Ser Val Leu Thr Ala Val	165	170	175
Tyr Ala Leu Ala Asn Leu Ala Ala Ala Ala Phe Leu Leu Phe Gln Asn	180	185	190
Arg Cys Arg Leu Lys Ala Val Arg Arg Ala Pro Phe Ser Pro Ala Val	195	200	205
Leu His Arg Gly Leu Arg Tyr Gly Ile Pro Leu Ala Leu Ser Ser Leu	210	215	220
Ala Tyr Trp Gly Leu Ala Ser Ala Asp Arg Leu Phe Leu Lys Lys Tyr	225	230	235
Ala Gly Leu Glu Gln Leu Gly Val Tyr Ser Met Gly Ile Ser Phe Gly	245	250	255
Gly Ala Ala Leu Leu Leu Gln Ser Ile Phe Ser Thr Val Trp Thr Pro	260	265	270
Tyr Ile Phe Arg Ala Ile Glu Glu Asn Ala Thr Pro Ala Arg Leu Ser	275	280	285
Ala Thr Ala Glu Ser Ala Ala Ala Leu Leu Ala Ser Ala Leu Cys Leu	290	295	300
Thr Gly Ile Phe Ser Pro Leu Ala Ser Leu Leu Leu Pro Glu Asn Tyr	305	310	315
Ala Ala Val Arg Phe Thr Val Val Ser Cys Met Leu Pro Pro Leu Phe	325	330	335
Tyr Thr Leu Thr Glu Ile Ser Gly Ile Gly Leu Asn Val Val Arg Lys	340	345	350
Thr Arg Pro Ile Ala Leu Ala Thr Leu Gly Ala Leu Ala Ala Asn Leu	355	360	365
Leu Leu Leu Gly Leu Ala Val Pro Ser Gly Gly Thr Arg Gly Ala Ala	370	375	380
Val Ala Cys Ala Ala Ser Phe Trp Leu Phe Phe Val Phe Lys Thr Glu	385	390	395
Ser Ser Cys Arg Leu Trp Gln Pro Leu Lys Arg Leu Pro Leu Tyr Met	405	410	415

His Thr Leu Phe Cys Leu Ala Ser Ser Ala Ala Tyr Thr Cys Phe Gly  
 420 425 430

Thr Pro Ala Asn Tyr Pro Leu Phe Ala Gly Val Trp Ala Ala Tyr Leu  
 435 440 445

Ala Gly Cys Ile Leu Arg His Arg Lys Asn Leu His Lys Leu Phe His  
 450 455 460

Tyr Leu Lys Lys Gln Gly Phe Pro Leu  
 465 470

<210> 381  
 <211> 637  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 381  
 atcctgaaac cgcataacca gcttaaggaa gacatccaac ctgatccggc cgatcaaaac 60  
 gccttgctccg aaccggatgc tgcgacagag gcagagcagt cggatgcgga aaatgctgcc 120  
 gacaagcagc ccgttgccga taaagccgac gaggttgaag aaaaggcggg cgagccggaa 180  
 cgggaagagc cggacggaca ggcagtgcgt aagaaagcgc tgacggaaga gcgtgaacaa 240  
 accgtcaggg aaaaagcgcga gaagaaagat gccgaaacgg ttaaaataca agcggtaaaa 300  
 ccgtctaaag aaacagagaa aaaagcttca aaagaagaga aaaaggcggc gaaggaaaaa 360  
 gttgcaccca aaccaacccc ggaacaaatc ctcaacagcg gcagcatcga aaamgcgcgc 420  
 agtgccgccc ccaaagaagt gcagaaaatg aaaacgtccg acaaggcggg agcaacgcat 480  
 tatctgcaaa tgggcgcgta tgccgaccgt cagagcgcgg aagggcagcg tgccaaactg 540  
 gcaatcttgg gcatacttcc caaggtggtc gggtatcagg cgggacataa aacgctttac 600  
 cgggtgcaaa gcggcaatat gtctgccgat gcggtga 637

<210> 382  
 <211> 212  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (138)..(138)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (151)..(151)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (159)..(159)  
 <223> Xaa= any amino acid

<400> 382  
 Ile Leu Lys Pro His Asn Gln Leu Lys Glu Asp Ile Gln Pro Asp Pro  
 1 5 10 15  
 Ala Asp Gln Asn Ala Leu Ser Glu Pro Asp Ala Ala Thr Glu Ala Glu  
 20 25 30



Gln Ser Asp Ala Glu Asn Ala Ala Asp Lys Gln Pro Val Ala Asp Lys  
 35 40 45  
 Ala Asp Glu Val Glu Glu Lys Ala Gly Glu Pro Glu Arg Glu Glu Pro  
 50 55 60  
 Asp Gly Gln Ala Val Arg Lys Lys Ala Leu Thr Glu Glu Arg Glu Gln  
 65 70 75 80  
 Thr Val Arg Glu Lys Ala Gln Lys Lys Asp Ala Glu Thr Val Lys Ile  
 85 90 95  
 Gln Ala Val Lys Pro Ser Lys Glu Thr Glu Lys Lys Ala Ser Lys Glu  
 100 105 110  
 Glu Lys Lys Ala Ala Lys Glu Lys Val Ala Pro Lys Pro Thr Pro Glu  
 115 120 125  
 Gln Ile Leu Asn Ser Gly Ser Ile Glu Xaa Ala Arg Ser Ala Ala Ala  
 130 135 140  
 Lys Glu Val Gln Lys Met Xaa Asn Val Arg Gln Gly Gly Ser Xaa Arg  
 145 150 155 160  
 Ile Ile Cys Lys Trp Ala Arg Met Pro Thr Val Arg Ala Arg Lys Gly  
 165 170 175  
 Ser Val Pro Asn Trp Gln Ser Trp Ala Tyr Leu Pro Arg Trp Ser Val  
 180 185 190  
 Ile Arg Arg Asp Ile Lys Arg Phe Thr Gly Cys Lys Ala Ala Ile Cys  
 195 200 205  
 Leu Pro Met Arg  
 210

<210> 383  
 <211> 870  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 383  
 atgtttatga acaaattttc ccaatccgga aaaggtctgt ccggtttttt cttcggtttg 60  
 atactggcga cggtcattat tgccgggtatt ttgtttttatc tgaaccagag cgggtcaaaat 120  
 gcgttcaaaa tcccggcttc gtcgaagcag cctgcagaaa cggaaatcct gaaaccgaaa 180  
 aaccagccta aggaagacat ccaacctgaa ccggccgatac aaaacgcctt gtccgaaccg 240  
 gatgctgcga cagaggcaga gcagtcggat gcggaaaaag ctgccgacaa gcagcccgtt 300  
 gccgataaag ccgacgaggt tgaagaaaag gcgggacgagc cggaaacggga agagccggac 360  
 ggacaggcag tgcgtaagaa agcgtgacg gaagagcgtg aacaaaccgt cagggaaaaa 420  
 gcgcagaaga aagatgccga aacgggttaa aaacaagcgg taaaaccgtc' taaagaaaca 480  
 gagaaaaaag cttcaaaaaga agagaaaaag gcggcggaagg aaaaagttgc acccaaacca 540  
 accccggaac aaatcctcaa cagcgggcagc atcgaaaaag cgcgcagtgc cgccgccaaa 600  
 gaagtgcaga aaatgaaaac gtccgacaag gcggaagcaa cgcattatct gcaaattgggc 660  
 gcgtatgccg accgtcagag cgcggaaggg cagcgtgcc aactggcaat cttgggcata 720  
 tcttccaagg tggtcggtta tcaggcggga cataaaacgc tttaccgggt gcaaagcggc 780  
 aatatgtctg ccgatgcggt gaaaaaaatg caggacgagt tgaaaaaaca tgaagtcgcc 840

agcctgatcc gttctatcga aagcaaataa

870

<210> 384

<211> 289

<212> PRT

<213> Neisseria meningitidis

<400> 384

Met Phe Met Asn Lys Phe Ser Gln Ser Gly Lys Gly Leu Ser Gly Phe  
1 5 10 15

Phe Phe Gly Leu Ile Leu Ala Thr Val Ile Ile Ala Gly Ile Leu Phe  
20 25 30

Tyr Leu Asn Gln Ser Gly Gln Asn Ala Phe Lys Ile Pro Ala Ser Ser  
35 40 45

Lys Gln Pro Ala Glu Thr Glu Ile Leu Lys Pro Lys Asn Gln Pro Lys  
50 55 60

Glu Asp Ile Gln Pro Glu Pro Ala Asp Gln Asn Ala Leu Ser Glu Pro  
65 70 75 80

Asp Ala Ala Thr Glu Ala Glu Gln Ser Asp Ala Glu Lys Ala Ala Asp  
85 90 95

Lys Gln Pro Val Ala Asp Lys Ala Asp Glu Val Glu Glu Lys Ala Gly  
100 105 110

Glu Pro Glu Arg Glu Glu Pro Asp Gly Gln Ala Val Arg Lys Lys Ala  
115 120 125

Leu Thr Glu Glu Arg Glu Gln Thr Val Arg Glu Lys Ala Gln Lys Lys  
130 135 140

Asp Ala Glu Thr Val Lys Lys Gln Ala Val Lys Pro Ser Lys Glu Thr  
145 150 155 160

Glu Lys Lys Ala Ser Lys Glu Glu Lys Lys Ala Ala Lys Glu Lys Val  
165 170 175

Ala Pro Lys Pro Thr Pro Glu Gln Ile Leu Asn Ser Gly Ser Ile Glu  
180 185 190

Lys Ala Arg Ser Ala Ala Ala Lys Glu Val Gln Lys Met Lys Thr Ser  
195 200 205

Asp Lys Ala Glu Ala Thr His Tyr Leu Gln Met Gly Ala Tyr Ala Asp  
210 215 220

Arg Gln Ser Ala Glu Gly Gln Arg Ala Lys Leu Ala Ile Leu Gly Ile  
225 230 235 240

Ser Ser Lys Val Val Gly Tyr Gln Ala Gly His Lys Thr Leu Tyr Arg  
245 250 255

Val Gln Ser Gly Asn Met Ser Ala Asp Ala Val Lys Lys Met Gln Asp  
 260 265 270

Glu Leu Lys Lys His Glu Val Ala Ser Leu Ile Arg Ser Ile Glu Ser  
 275 280 285

Lys

<210> 385  
 <211> 770  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 385  
 tgaaccagag cgggtcaaaat gcgttcaaaa tcccggttcc gtcgaagcag cctgcagaaa 60  
 cggaaatcct gaaaccgaaa aaccagccta aggaagacat ccaacctgaa ccggccgatc 120  
 aaaacgcctt gtccgaaccg gatgctgcga aagaggcaga gcagtcggat gcggaaaaag 180  
 ctgccgacaa gcagcccgtt gccgacaaag ccgacgaggt tgaggaaaag gcggacgagc 240  
 cggagcggga aaagtcggac ggacaggcag tgcgcaagaa agcactgacg gaagagcgtg 300  
 aacaaaccgt cggggaaaaa gcgcagaaga aagatgccga aacggttaaa aaacaagcgg 360  
 taaaaccatc taaagaaaca gagaaaaaag cttcaaaaga agagaaaaag gcggagaagg 420  
 aaaaagtgc acccaaaccg accccggaac aaatcctcaa cagcggcagc atcgaaaaag 480  
 cgcgcagtgc cgctgccaaa gaagtgcaga aaatgaaaac gcccgacaag gcggaagcaa 540  
 cgcattatct gcaaattggc gcgtatgccg accgccggag cgcggaaggg cagcgtgcc 600  
 aactggcaat cttgggcata tcttccaagg tggtcgggta tcaggcggga cataaacgc 660  
 tttaccgggt gcaaagcggc aatatgtctg ccgatgcggt gaaaaaatg caggacgagt 720  
 tgaaaaaaca tgaagtcgcc agcctgatcc gttctatcga aagcaaataa 770

<210> 386  
 <211> 289  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 386  
 Met Phe Met Asn Lys Phe Ser Gln Ser Gly Lys Gly Leu Ser Gly Phe  
 1 5 10 15  
 Phe Phe Gly Leu Ile Leu Ala Thr Val Ile Ile Ala Gly Ile Leu Phe  
 20 25 30  
 Tyr Leu Asn Gln Ser Gly Gln Asn Ala Phe Lys Ile Pro Val Pro Ser  
 35 40 45  
 Lys Gln Pro Ala Glu Thr Glu Ile Leu Lys Pro Lys Asn Gln Pro Lys  
 50 55 60  
 Glu Asp Ile Gln Pro Glu Pro Ala Asp Gln Asn Ala Leu Ser Glu Pro  
 65 70 75 80  
 Asp Ala Ala Lys Glu Ala Glu Gln Ser Asp Ala Glu Lys Ala Ala Asp  
 85 90 95  
 Lys Gln Pro Val Ala Asp Lys Ala Asp Glu Val Glu Glu Lys Ala Asp  
 100 105 110

Glu Pro Glu Arg Glu Lys Ser Asp Gly Gln Ala Val Arg Lys Lys Ala  
 115 120 125  
 Leu Thr Glu Glu Arg Glu Gln Thr Val Gly Glu Lys Ala Gln Lys Lys  
 130 135 140  
 Asp Ala Glu Thr Val Lys Lys Gln Ala Val Lys Pro Ser Lys Glu Thr  
 145 150 155 160  
 Glu Lys Lys Ala Ser Lys Glu Glu Lys Lys Ala Glu Lys Glu Lys Val  
 165 170 175  
 Ala Pro Lys Pro Thr Pro Glu Gln Ile Leu Asn Ser Gly Ser Ile Glu  
 180 185 190  
 Lys Ala Arg Ser Ala Ala Ala Lys Glu Val Gln Lys Met Lys Thr Pro  
 195 200 205  
 Asp Lys Ala Glu Ala Thr His Tyr Leu Gln Met Gly Ala Tyr Ala Asp  
 210 215 220  
 Arg Arg Ser Ala Glu Gly Gln Arg Ala Lys Leu Ala Ile Leu Gly Ile  
 225 230 235 240  
 Ser Ser Lys Val Val Gly Tyr Gln Ala Gly His Lys Thr Leu Tyr Arg  
 245 250 255  
 Val Gln Ser Gly Asn Met Ser Ala Asp Ala Val Lys Lys Met Gln Asp  
 260 265 270  
 Glu Leu Lys Lys His Glu Val Ala Ser Leu Ile Arg Ser Ile Glu Ser  
 275 280 285

Lys

<210> 387  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 387  
 nnnnnnnnn

<210> 388  
 <211> 267  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 388  
 Met Phe Met Asn Lys Phe Ser Gln Ser Gly Lys Gly Leu Ser Gly Phe

1	5	10	15
Phe Phe Gly Leu Ile Leu Ala Thr Val Ile Ile Ala Gly Ile Leu Leu	20	25	30
Tyr Leu Asn Gln Gly Gly Gln Asn Ala Phe Lys Ile Pro Ala Pro Ser	35	40	45
Lys Gln Pro Ala Glu Thr Glu Ile Leu Lys Leu Lys Asn Gln Pro Lys	50	55	60
Glu Asp Ile Gln Pro Glu Pro Ala Asp Gln Asn Ala Leu Ser Glu Pro	65	70	75
Asp Val Ala Lys Glu Ala Glu Gln Ser Asp Ala Glu Lys Ala Ala Asp	85	90	95
Lys Gln Pro Val Ala Asp Lys Ala Asp Glu Val Glu Glu Lys Ala Gly	100	105	110
Glu Pro Glu Arg Glu Glu Pro Asp Gly Gln Ala Val Arg Lys Lys Ala	115	120	125
Leu Thr Glu Glu Arg Glu Gln Thr Val Arg Glu Lys Ala Gln Lys Lys	130	135	140
Asp Ala Glu Thr Val Lys Lys Lys Ala Val Lys Pro Ser Lys Glu Thr	145	150	155
Glu Lys Lys Ala Ser Lys Glu Glu Lys Lys Ala Ala Lys Glu Lys Val	165	170	175
Ala Pro Lys Pro Thr Pro Glu Gln Ile Leu Asn Ser Arg Ser Ile Glu	180	185	190
Lys Ala Arg Ser Ala Ala Ala Lys Glu Val Gln Lys Met Lys Asn Phe	195	200	205
Gly Gln Gly Gly Ser Gln Arg Ile Ile Cys Lys Trp Ala Arg Met Pro	210	215	220
Asn Pro Gly Ala Arg Lys Gly Ser Val Pro Asn Trp Gln Ser Trp Ala	225	230	235
Tyr Leu Pro Lys Trp Ser Ala Ile Arg Arg Asp Ile Lys Arg Phe Thr	245	250	255
Ala Cys Lys Ala Ala Ile Cys Pro Pro Met Arg	260	265	

<210> 389  
 <211> 873  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*  
 <400> 389

atgtttatga	acaaattttc	ccaatccgga	aaaggtctgt	ccggtttctt	cttcggtttg	60
atactggcaa	cggtcattat	tgccggtatt	ttgctttatc	tgaaccaggg	cggtcaaaat	120
gcgttcaaaa	tcccggctcc	gtcgaagcag	cctgcagaaa	cggaaatcct	gaaactgaaa	180
aaccagccta	aggaagacat	ccaacctgaa	ccggccgata	aaaacgcctt	gtccgaaccg	240
gatgttgcca	aagaggcaga	gcagtcggat	gcggaaaaag	ctgccgacaa	gcagcccgtt	300
gccgacaaa	ccgacgaggt	tgaagaaaag	gcgggcgagc	cggaacggga	agagccggac	360
ggacaggcag	tgcgcaagaa	agcactgacg	gaagagcgtg	aacaaaccgt	cagggaaaaa	420
gcgcagaaga	aagatgccga	aacggttaaa	aaacaagcgg	taaaaccgtc	taaagaaaca	480
gagaaaaaag	cttcaaaaaga	agagaaaaag	gcggcgaaaag	aaaaagttgc	acccaaaccg	540
accccggaac	aaatcctcaa	cagccgcagc	atcgaaaaag	cgcgtagtgc	cgctgccaaa	600
gaagtgcaga	aaatgaaaaa	ctttgggcaa	ggcggaagcc	aacgcattat	ctgcaaatgg	660
gcgcgtatgc	cgaccgtccg	gagcgcggaa	gggcagcgtg	ccaaactggc	aatcttgggc	720
atatcttccg	aagtggtcgg	ctatcaggcg	ggacataaaa	cgttttaccg	cgtgcaaagc	780
ggcaatatgt	ccgccgatgc	ggtgaaaaaa	atgcaggacg	agttgaaaaa	gcattggggtt	840
gccagcctga	tccgtgcgat	tgaaggcaaa	taa			873

<210> 390  
 <211> 290  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 390

Met	Phe	Met	Asn	Lys	Phe	Ser	Gln	Ser	Gly	Lys	Gly	Leu	Ser	Gly	Phe
1				5					10					15	
Phe	Phe	Gly	Leu	Ile	Leu	Ala	Thr	Val	Ile	Ile	Ala	Gly	Ile	Leu	Leu
			20					25					30		
Tyr	Leu	Asn	Gln	Gly	Gly	Gln	Asn	Ala	Phe	Lys	Ile	Pro	Ala	Pro	Ser
		35					40					45			
Lys	Gln	Pro	Ala	Glu	Thr	Glu	Ile	Leu	Lys	Leu	Lys	Asn	Gln	Pro	Lys
		50					55					60			
Glu	Asp	Ile	Gln	Pro	Glu	Pro	Ala	Asp	Gln	Asn	Ala	Leu	Ser	Glu	Pro
65					70					75				80	
Asp	Val	Ala	Lys	Glu	Ala	Glu	Gln	Ser	Asp	Ala	Glu	Lys	Ala	Ala	Asp
			85					90						95	
Lys	Gln	Pro	Val	Ala	Asp	Lys	Ala	Asp	Glu	Val	Glu	Glu	Lys	Ala	Gly
			100					105						110	
Glu	Pro	Glu	Arg	Glu	Glu	Pro	Asp	Gly	Gln	Ala	Val	Arg	Lys	Lys	Ala
		115					120					125			
Leu	Thr	Glu	Glu	Arg	Glu	Gln	Thr	Val	Arg	Glu	Lys	Ala	Gln	Lys	Lys
		130				135					140				
Asp	Ala	Glu	Thr	Val	Lys	Lys	Gln	Ala	Val	Lys	Pro	Ser	Lys	Glu	Thr
145					150					155				160	
Glu	Lys	Lys	Ala	Ser	Lys	Glu	Glu	Lys	Lys	Ala	Ala	Lys	Glu	Lys	Val
				165					170					175	
Ala	Pro	Lys	Pro	Thr	Pro	Glu	Gln	Ile	Leu	Asn	Ser	Arg	Ser	Ile	Glu

180	185	190
Lys Ala Arg Ser Ala Ala Ala	Lys Glu Val Gln Lys Met Lys Asn Phe	
195	200	205
Gly Gln Gly Gly Ser Gln Arg Ile Ile Cys Lys Trp Ala Arg Met Pro		
210	215	220
Thr Val Arg Ser Ala Glu Gly Gln Arg Ala Lys Leu Ala Ile Leu Gly		
225	230	235
Ile Ser Ser Glu Val Val Gly Tyr Gln Ala Gly His Lys Thr Leu Tyr		
245	250	255
Arg Val Gln Ser Gly Asn Met Ser Ala Asp Ala Val Lys Lys Met Gln		
260	265	270
Asp Glu Leu Lys Lys His Gly Val Ala Ser Leu Ile Arg Ala Ile Glu		
275	280	285
Gly Lys		
290		

<210> 391  
 <211> 668  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 391

atgaaccacg	acatcacttt	cctcaccctg	ttcctactcg	gtktcttcgg	cggaacgcac	60
tgcacgcgta	tgtgcggcgg	attaagcagc	gcgtttgsst	ccaactcccc	ccgcatatca	120
accgcttttg	gctgatcctg	ctgcttaaca	caggacgggt	aagcagctat	acggcaatcg	180
gcctgatact	cggattaatc	ggacaggctg	gcgtttcact	cgaccaaacc	cgcgtcctgc	240
agaatatttt	atacacggcc	gccaacctcc	tgctgctctt	tttaggetta	tacttgagcg	300
gtatttcttc	cttggcggca	aaaatcgaga	aaatcggcaa	accgatatgg	cggaacctga	360
acccgatact	caaccggctg	ttacccataa	aatccatacc	cgctgcctt	gcggtcggaa	420
tattatgggg	ctggetgcgg	tgcggaactg	tttacagcgc	gtcgctttac	gcgctgggaa	480
gcggtagtgc	ggcaacgggc	gggttatata	tgcttgccct	tgcaactgggt	acgctgccca	540
atcttttagc	aatcggcatt	ttttccctgc	aactgaawaa	aatcatgcaa	aaccgatata	600
tccgcctgtg	tacgggatta	tccgtatcat	tatgggcatt	atggaaactt	gccgtcctgt	660
ggctgtaa						668

<210> 392  
 <211> 222  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (15)..(15)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (33)..(34)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (193)..(193)  
 <223> Xaa= any amino acid

<400> 392

Met	Asn	His	Asp	Ile	Thr	Phe	Leu	Thr	Leu	Phe	Leu	Leu	Gly	Xaa	Phe	
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Gly	Gly	Thr	His	Cys	Ile	Gly	Met	Cys	Gly	Gly	Leu	Ser	Ser	Ala	Phe	
			20					25					30			
Xaa	Xaa	Gln	Leu	Pro	Pro	His	Ile	Asn	Arg	Phe	Trp	Leu	Ile	Leu	Leu	
		35					40					45				
Leu	Asn	Thr	Gly	Arg	Val	Ser	Ser	Tyr	Thr	Ala	Ile	Gly	Leu	Ile	Leu	
	50					55					60					
Gly	Leu	Ile	Gly	Gln	Val	Gly	Val	Ser	Leu	Asp	Gln	Thr	Arg	Val	Leu	
65				70						75					80	
Gln	Asn	Ile	Leu	Tyr	Thr	Ala	Ala	Asn	Leu	Leu	Leu	Leu	Phe	Leu	Gly	
			85					90						95		
Leu	Tyr	Leu	Ser	Gly	Ile	Ser	Ser	Leu	Ala	Ala	Lys	Ile	Glu	Lys	Ile	
		100						105					110			
Gly	Lys	Pro	Ile	Trp	Arg	Asn	Leu	Asn	Pro	Ile	Leu	Asn	Arg	Leu	Leu	
		115					120					125				
Pro	Ile	Lys	Ser	Ile	Pro	Ala	Cys	Leu	Ala	Val	Gly	Ile	Leu	Trp	Gly	
	130					135					140					
Trp	Leu	Pro	Cys	Gly	Leu	Val	Tyr	Ser	Ala	Ser	Leu	Tyr	Ala	Leu	Gly	
145				150						155				160		
Ser	Gly	Ser	Ala	Ala	Thr	Gly	Gly	Leu	Tyr	Met	Leu	Ala	Phe	Ala	Leu	
			165					170					175			
Gly	Thr	Leu	Pro	Asn	Leu	Leu	Ala	Ile	Gly	Ile	Phe	Ser	Leu	Gln	Leu	
		180					185						190			
Xaa	Lys	Ile	Met	Gln	Asn	Arg	Tyr	Ile	Arg	Leu	Cys	Thr	Gly	Leu	Ser	
	195					200					205					
Val	Ser	Leu	Trp	Ala	Leu	Trp	Lys	Leu	Ala	Val	Leu	Trp	Leu			
	210					215					220					

<210> 393  
 <211> 669  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 393

atgaaccacg	acatcacttt	cctcaccctg	ttcctactcg	gtttcttcgg	cggaacgcac	60
tgcatcggtg	tgtgcggcgg	attaagcagc	gcgtttgcgc	tcctaactccc	cccgcatac	120



aaccgctttt	ggctgaccc	gctgcttaac	acaggacggg	taagcagcta	tacggcaatc	180
ggcctgatac	tcggattaat	cggacaggtc	ggcgtttcac	tcgaccaaac	ccgcgtcctg	240
cagaatattt	tatacacggc	cgccaacctc	ctgctgtctt	ttttaggctt	atacttgagc	300
ggatatttctt	ccttggcggc	aaaaatcgag	aaaatcggca	aaccgatatg	gcggaacctg	360
aacccgatac	tcaaccggct	gttaccata	aaatccatac	ccgcctgcct	tgcggtcgga	420
atattatggg	gctggctgcc	gtgcggactg	gtttacagcg	cgctcgctta	cgcgctggga	480
agcggtagtg	cggcaacggg	cgggttatat	atgcttgctt	ttgcactggg	tacgctgccc	540
aatcttttag	caatcggcat	ttttccctg	caactgaaaa	aaatcatgca	aaaccgatat	600
atccgcctgt	gtacgggatt	atccgtatca	ttatgggcat	tatggaaact	tgccgtcctg	660
tggtctgtaa						669

<210> 394  
 <211> 222  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 394'  
 Met Asn His Asp Ile Thr Phe Leu Thr Leu Phe Leu Leu Gly Phe Phe  
 1 5 10 15  
 Gly Gly Thr His Cys Ile Gly Met Cys Gly Gly Leu Ser Ser Ala Phe  
 20 25 30  
 Ala Leu Gln Leu Pro Pro His Ile Asn Arg Phe Trp Leu Ile Leu Leu  
 35 40 45  
 Leu Asn Thr Gly Arg Val Ser Ser Tyr Thr Ala Ile Gly Leu Ile Leu  
 50 55 60  
 Gly Leu Ile Gly Gln Val Gly Val Ser Leu Asp Gln Thr Arg Val Leu  
 65 70 75 80  
 Gln Asn Ile Leu Tyr Thr Ala Ala Asn Leu Leu Leu Phe Leu Gly  
 85 90 95  
 Leu Tyr Leu Ser Gly Ile Ser Ser Leu Ala Ala Lys Ile Glu Lys Ile  
 100 105 110  
 Gly Lys Pro Ile Trp Arg Asn Leu Asn Pro Ile Leu Asn Arg Leu Leu  
 115 120 125  
 Pro Ile Lys Ser Ile Pro Ala Cys Leu Ala Val Gly Ile Leu Trp Gly  
 130 135 140  
 Trp Leu Pro Cys Gly Leu Val Tyr Ser Ala Ser Leu Tyr Ala Leu Gly  
 145 150 155 160  
 Ser Gly Ser Ala Ala Thr Gly Gly Leu Tyr Met Leu Ala Phe Ala Leu  
 165 170 175  
 Gly Thr Leu Pro Asn Leu Leu Ala Ile Gly Ile Phe Ser Leu Gln Leu  
 180 185 190  
 Lys Lys Ile Met Gln Asn Arg Tyr Ile Arg Leu Cys Thr Gly Leu Ser  
 195 200 205

Val Ser Leu Trp Ala Leu Trp Lys Leu Ala Val Leu Trp Leu  
 210 215 220

<210> 395  
 <211> 669  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (9)..(9)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (129)..(129)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (238)..(238)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (548)..(548)  
 <223> N= Unknown

<220>  
 <221> misc\_feature  
 <222> (577)..(577)  
 <223> N= Unknown

<400> 395  
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 tgcacgggta tgtgcggcgg attaagcagc gcgtttgcgc tccaactccc cccgcatatc 120  
 aaccgcttnt ggctgaccc gctgcttaac acaggacggg taagcagcta tacggcaatc 180  
 ggccctgatac tcggattaat cggacaggtc ggcgtttcac tcgaccaaac ccgcgtcttg 240  
 cagaatattt tatacacggc cgccaacctc ctgctgctct ttttaggctt atacttgagc 300  
 ggtattttctt ccttggcggc aaaaatcgag aaaatcggca aaccgatatg gcggaacctg 360  
 aacccgatac tcaaccggct gttaccata aaatccata ccgcctgcct tgcggtcgga 420  
 atattatggg gctggctgcc gtgcggacta gtttacagcg cgtcgcttta cgcgctggga 480  
 agcggtagtg cggcaacggg cgggttatat atgcttgcc ttgcactggg tacgctgccc 540  
 aatctttngg caatcggcat tttttccctg caactgnaaa aaatcatgca aaaccgatat 600  
 atccgcctgt gtacgggatt atccgtatca ttatgggcat tatggaaact tgccgtcctg 660  
 tggctgttaa 669

<210> 396  
 <211> 222  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (43)..(43)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (80)..(80)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (183)..(183)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (193)..(193)  
<223> Xaa= any amino acid

<400> 396  
Met Asn Xaa Asp Ile Thr Phe Leu Thr Leu Phe Leu Leu Gly Phe Phe  
1 5 10 15  
Gly Gly Thr His Cys Ile Gly Met Cys Gly Gly Leu Ser Ser Ala Phe  
20 25 30  
Ala Leu Gln Leu Pro Pro His Ile Asn Arg Xaa Trp Leu Ile Leu Leu  
35 40 45  
Leu Asn Thr Gly Arg Val Ser Ser Tyr Thr Ala Ile Gly Leu Ile Leu  
50 55 60  
Gly Leu Ile Gly Gln Val Gly Val Ser Leu Asp Gln Thr Arg Val Xaa  
65 70 75 80  
Gln Asn Ile Leu Tyr Thr Ala Ala Asn Leu Leu Leu Leu Phe Leu Gly  
85 90 95  
Leu Tyr Leu Ser Gly Ile Ser Ser Leu Ala Ala Lys Ile Glu Lys Ile  
100 105 110  
Gly Lys Pro Ile Trp Arg Asn Leu Asn Pro Ile Leu Asn Arg Leu Leu  
115 120 125  
Pro Ile Lys Ser Ile Pro Ala Cys Leu Ala Val Gly Ile Leu Trp Gly  
130 135 140  
Trp Leu Pro Cys Gly Leu Val Tyr Ser Ala Ser Leu Tyr Ala Leu Gly  
145 150 155 160  
Ser Gly Ser Ala Ala Thr Gly Gly Leu Tyr Met Leu Ala Phe Ala Leu  
165 170 175  
Gly Thr Leu Pro Asn Leu Xaa Ala Ile Gly Ile Phe Ser Leu Gln Leu  
180 185 190

Xaa Lys Ile Met Gln Asn Arg Tyr Ile Arg Leu Cys Thr Gly Leu Ser  
 195 200 205

Val Ser Leu Trp Ala Leu Trp Lys Leu Ala Val Leu Trp Leu  
 210 215 220

<210> 397  
 <211> 669  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 397  
 atgaaccacg acatcacttt cctcaccctg ttcttgctcg gtttcttcgg cggaactcac 60  
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 aaccgctttt ggctgattct gctgcttaac acaggacgga taagcagcta tacggcaatc 180  
 ggccctgatgc tcggattaat cggacaactc ggcatttcac tcgaccaaac ccgcgtcctg 240  
 caaaatatatt tatacacagc ctccaacctc ctgctgctct ttttaggctt atacttgagc 300  
 ggtattttctt ccttggcggc aaaaatcgag aaaatcggca aaccgatatg gcgcaacctg 360  
 aacccgatac tcaaccggct gctgcccata aaatccatac ccgcctgcct tgctgtcggg 420  
 atattatggg gctggctgcc gtgcggactg gtttacagcg catcacttta cgcgctggga 480  
 agcggtagtg cgacaaccgg cggactgtat atgcttgctt ttgcactggg tacgctgccc 540  
 aatcttttgg caatcggcat tttttccctg caactgaaaa aaatcatgca aaaccgatat 600  
 atccgcctgt gtacaggatt atccgtatca ttatgggcat tatggaagct tgccgtcctg 660  
 tggtctgtaa 669

<210> 398  
 <211> 222  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 398  
 Met Asn His Asp Ile Thr Phe Leu Thr Leu Phe Leu Leu Gly Phe Phe  
 1 5 10 15  
 Gly Gly Thr His Cys Ile Gly Met Cys Gly Gly Leu Ser Ser Ala Phe  
 20 25 30  
 Ala Leu Gln Leu Pro Pro His Ile Asn Arg Phe Trp Leu Ile Leu Leu  
 35 40 45  
 Leu Asn Thr Gly Arg Ile Ser Ser Tyr Thr Ala Ile Gly Leu Met Leu  
 50 55 60  
 Gly Leu Ile Gly Gln Leu Gly Ile Ser Leu Asp Gln Thr Arg Val Leu  
 65 70 75 80  
 Gln Asn Ile Leu Tyr Thr Ala Ser Asn Leu Leu Leu Leu Phe Leu Gly  
 85 90 95  
 Leu Tyr Leu Ser Gly Ile Ser Ser Leu Ala Ala Lys Ile Glu Lys Ile  
 100 105 110  
 Gly Lys Pro Ile Trp Arg Asn Leu Asn Pro Ile Leu Asn Arg Leu Leu  
 115 120 125  
 Pro Ile Lys Ser Ile Pro Ala Cys Leu Ala Val Gly Ile Leu Trp Gly

130

135

140

Trp Leu Pro Cys Gly Leu Val Tyr Ser Ala Ser Leu Tyr Ala Leu Gly  
145 150 155 160

Ser Gly Ser Ala Thr Thr Gly Gly Leu Tyr Met Leu Ala Phe Ala Leu  
165 170 175

Gly Thr Leu Pro Asn Leu Leu Ala Ile Gly Ile Phe Ser Leu Gln Leu  
180 185 190

Lys Lys Ile Met Gln Asn Arg Tyr Ile Arg Leu Cys Thr Gly Leu Ser  
195 200 205

Val Ser Leu Trp Ala Leu Trp Lys Leu Ala Val Leu Trp Leu  
210 215 220

&lt;210&gt; 399

&lt;211&gt; 832

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 399

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ggaacgctgc	cgattccgtg	cggcaggtat	tgaagtttgt	cgatgcgcgc	acgctgggtgt	120
gggtgcgttt	taccgtggcg	gcggcgggtat	tgtttggttt	gctggcactg	ggcgggcggc	180
tgccgaagcg	gcgaggattt	ttcttggtgc	tcattcaggc	tgctgctgct	cggcgtggcg	240
ggcatttcgg	caaaccttgt	gctgattgcc	acgatgattg	twgtcgggtgt	gttgggtgtt	300
acgcaggttt	tgtggcagat	ttcgccgttt	acgatgattg	twgtcgggtgt	gttgggtgtt	360
aaagaccgga	tgactgccgc	tcagaaaatc	ggcttggttt	tgctgcttgc	cggtttgctt	420
atgtatttta	acgataaatt	cggcgagttg	tcgggttttg	gcgcgtatgc	aagggcgtgt	480
tgctgtgtgc	ggcaggcagt	atggcatggg	tgtgtaatgc	cgtggcgcaa	aagctgctgt	540
cggcgcaatt	cgggcgcgaa	cagattctgc	tgttgattta	tgccgcaagt	gccgccgtgt	600
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aacattggga	ggcttccaaa	gtcagcgcg	taacaacctt	gctccccgtg	tttaccgtaa	780
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&lt;210&gt; 400

&lt;211&gt; 277

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (25)..(25)

&lt;223&gt; Xaa= any amino acid

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (157)..(157)

&lt;223&gt; Xaa= any amino acid

&lt;400&gt; 400

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 20 25 30  
 Phe Val Asp Ala Pro Thr Leu Val Trp Val Arg Phe Thr Val Ala Ala  
 35 40 45  
 Ala Val Leu Phe Val Leu Leu Ala Leu Gly Gly Arg Leu Pro Lys Arg  
 50 55 60  
 Arg Asp Phe Ser Trp Cys Ser Phe Arg Leu Leu Leu Leu Gly Val Ala  
 65 70 75 80  
 Gly Ile Ser Ala Asn Phe Val Leu Ile Ala Gln Gly Leu His Tyr Ile  
 85 90 95  
 Ser Pro Thr Thr Thr Gln Val Leu Trp Gln Ile Ser Pro Phe Thr Met  
 100 105 110  
 Ile Val Val Gly Val Leu Val Phe Lys Asp Arg Met Thr Ala Ala Gln  
 115 120 125  
 Lys Ile Gly Leu Val Leu Leu Leu Ala Gly Leu Leu Met Tyr Phe Asn  
 130 135 140  
 Asp Lys Phe Gly Glu Leu Ser Gly Leu Gly Ala Tyr Xaa Lys Gly Val  
 145 150 155 160  
 Leu Leu Cys Ala Ala Gly Ser Met Ala Trp Val Cys Asn Ala Val Ala  
 165 170 175  
 Gln Lys Leu Leu Ser Ala Gln Phe Gly Pro Gln Gln Ile Leu Leu Leu  
 180 185 190  
 Ile Tyr Ala Ala Ser Ala Ala Val Phe Leu Pro Phe Ala Glu Pro Ala  
 195 200 205  
 His Ile Gly Ser Met Asp Gly Thr Leu Ala Trp Val Cys Ile Ala Tyr  
 210 215 220  
 Cys Cys Leu Asn Thr Leu Ile Gly Tyr Gly Ser Phe Gly Glu Ala Leu  
 225 230 235 240  
 Lys His Trp Glu Ala Ser Lys Val Ser Ala Val Thr Thr Leu Leu Pro  
 245 250 255  
 Val Phe Thr Val Ile Asn Thr Leu Leu Gly His Tyr Val Met Pro Glu  
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<210> 401  
 <211> 833  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 401

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tcggcgcaat tcggggccgca acagattctg ctgttgattt atgcggcaag tgccgccgtg 600
ttcctgccgt ttgccgaacc ggcacacatc ggaagtgttg acggtacgtt ggcgtgggtt 660
tgttttgcgt attgctgctt gaatacgtta atcgggttacg gctcgttcgg cgaggcggtg 720
aaacattggg aggccttcaa agtcagcgcg gtaacaacct tgctccccgt gtttaccgta 780
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<210> 402

<211> 277

<212> PRT

<213> *Neisseria meningitidis*

<220>

<221> misc\_feature

<222> (262)..(263)

<223> Xaa= any amino acid

<400> 402

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Phe Val Asp Ala Pro Thr Leu Val Trp Val Arg Phe Thr Val Ala Ala
35           40           45

Ala Val Leu Phe Val Leu Leu Ala Leu Gly Gly Arg Leu Pro Lys Arg
50           55           60

Arg Asp Phe Ser Trp Cys Ser Phe Arg Leu Leu Leu Leu Gly Val Ala
65           70           75           80

Gly Ile Ser Ala Asn Phe Val Leu Ile Ala Gln Gly Leu His Tyr Ile
85           90           95

Ser Pro Thr Thr Thr Gln Val Leu Trp Gln Ile Ser Pro Phe Thr Met
100          105          110

Ile Val Val Gly Val Leu Val Phe Lys Asp Arg Met Thr Ala Ala Gln
115          120          125

Lys Ile Gly Leu Val Leu Leu Leu Ala Gly Leu Leu Met Phe Phe Asn
130          135          140

Asp Lys Phe Gly Glu Leu Ser Gly Leu Gly Ala Tyr Ala Lys Gly Val
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<400> 404
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1           5           10           15
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 20 25 30  
 Phe Val Asp Ala Pro Thr Leu Val Trp Val Arg Phe Thr Val Ala Ala  
 35 40 45  
 Ala Val Leu Phe Val Leu Leu Ala Leu Gly Gly Arg Leu Pro Lys Trp  
 50 55 60  
 Arg Asp Phe Ser Trp Cys Ser Phe Arg Leu Leu Leu Leu Gly Val Ala  
 65 70 75 80  
 Gly Ile Ser Ala Asn Phe Val Leu Ile Ala Gln Gly Leu His Tyr Ile  
 85 90 95  
 Ser Pro Thr Thr Thr Gln Val Leu Trp Gln Ile Ser Pro Phe Thr Met  
 100 105 110  
 Ile Val Val Gly Val Leu Val Phe Lys Asp Arg Met Thr Ala Ala Gln  
 115 120 125  
 Lys Ile Gly Leu Val Leu Leu Leu Ala Gly Leu Leu Met Phe Phe Asn  
 130 135 140  
 Asp Lys Phe Gly Glu Leu Ser Gly Leu Gly Ala Tyr Ala Lys Gly Val  
 145 150 155 160  
 Leu Leu Cys Ala Ala Gly Ser Met Ala Trp Val Cys Tyr Ala Val Ala  
 165 170 175  
 Gln Lys Leu Leu Ser Ala Gln Phe Gly Pro Gln Gln Ile Leu Leu Leu  
 180 185 190  
 Ile Tyr Ala Ala Ser Ala Ala Val Phe Leu Pro Phe Ala Glu Leu Ala  
 195 200 205  
 His Ile Gly Ser Leu Asp Gly Thr Leu Ala Trp Val Cys Phe Ala Tyr  
 210 215 220  
 Cys Cys Leu Asn Thr Leu Ile Gly Tyr Gly Ser Phe Gly Glu Ala Leu  
 225 230 235 240  
 Lys His Trp Glu Ala Ser Lys Val Ser Ala Val Thr Thr Leu Leu Pro  
 245 250 255  
 Val Phe Thr Val Ile Phe Ser Leu Leu Gly<sup>a</sup> His Tyr Val Met Pro Asp  
 260 265 270  
 Thr Phe Ala Ala Pro Asp Met Asn Gly Leu Gly Tyr Ala Gly Ala Leu  
 275 280 285  
 Val Val Val Gly Gly Ala Val Thr Ala Ala Val Gly Asp Arg Leu Phe  
 290 295 300  
 Lys Arg Arg  
 305

<210> 405  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
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 <223> N= Unknown

<400> 405  
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8

<210> 406  
 <211> 307  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<220>  
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 <222> (204)..(204)  
 <223> Xaa= any amino acid

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 Phe Val Asp Ala Pro Thr Leu Val Trp Val Arg Phe Thr Val Ala Ala  
 35 40 45  
 Ala Val Leu Phe Val Leu Leu Ala Leu Gly Gly Arg Leu Pro Lys Arg  
 50 55 60  
 Arg Asp Phe Ser Trp His Ser Phe Arg Leu Leu Leu Leu Gly Val Thr  
 65 70 75 80  
 Gly Ile Ser Ala Asn Phe Val Leu Ile Ala Gln Gly Leu His Tyr Ile  
 85 90 95  
 Ser Pro Thr Thr Thr Gln Val Leu Trp Gln Ile Ser Pro Phe Thr Met  
 100 105 110  
 Ile Val Val Gly Val Leu Val Phe Lys Asp Arg Met Thr Ala Ala Gln  
 115 120 125  
 Lys Ile Gly Leu Val Leu Leu Val Gly Leu Leu Met Phe Phe Asn  
 130 135 140  
 Asp Lys Phe Gly Glu Leu Ser Gly Leu Gly Ala Tyr Ala Lys Gly Val  
 145 150 155 160  
 Leu Leu Cys Ala Ala Gly Ser Met Ala Trp Val Cys Tyr Ala Val Ala  
 165 170 175

Gln Lys Leu Leu Ser Ala Gln Phe Gly Pro Gln Gln Ile Leu Leu Leu  
 180 185 190

Ile Tyr Ala Ala Ser Ala Ala Val Phe Leu Leu Xaa Ala Glu Pro Ala  
 195 200 205

His Ile Gly Ser Leu Asp Gly Thr Leu Ala Trp Val Cys Phe Val Tyr  
 210 215 220

Cys Cys Leu Asn Thr Leu Ile Gly Tyr Gly Ser Phe Gly Glu Ala Leu  
 225 230 235 240

Lys His Trp Glu Ala Ser Lys Val Ser Ala Val Thr Thr Leu Leu Pro  
 245 250 255

Val Phe Thr Val Ile Phe Ser Leu Leu Gly His Tyr Val Met Pro Asp  
 260 265 270

Thr Phe Ala Ala Pro Asp Met Asn Gly Leu Gly Tyr Val Gly Ala Leu  
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Val Val Val Gly Gly Ala Val Thr Ala Ala Val Gly Asp Arg Pro Phe  
 290 295 300

Lys Arg Arg  
 305

<210> 407  
 <211> 924  
 <212> DNA  
 <213> Neisseria gonorrhoeae

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 tgggtgcgtt ttaccgtggc ggccggcgga ttgtttgttt tgctggcatt gggcggggcgg 180  
 ctgccgaagc ggcgggattt ttcttggcat tcattcaggc tgctgctgct cggcgtgacg 240  
 ggcatttcgg caaactttgt gctgattgcc caagggtgc attatatttc gccgaccacg 300  
 acgcagggtt tgtggcagat ttccgcgttt acgatgattg ttgtcggcgt gttggtgttt 360  
 aaagaccgga tgactgccgc gcagaaaatc gggttgggtt tgctgcttgt cggtttgctt 420  
 atgtttttta acgacaaatt cggcgagttg tcgggttttg gcgcgtatgc gaagggcgtg 480  
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 ttectgccgt ttgccgaacc ggcacacatc ggaagtttg acggtacgtt ggcgtgggtt 660  
 tgttttgtgt attgctgctt gaatacgtta atcggttacg gctcgttcgg cgaggcgttg 720  
 aaacattggg aggcttccaa agtcagcgcg gtaacaacct tgctccccgt gtttaccgta 780  
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<210> 408  
 <211> 307  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 408

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			20					25					30			
Phe	Val	Asp	Ala	Pro	Thr	Leu	Val	Trp	Val	Arg	Phe	Thr	Val	Ala	Ala	
		35					40					45				
Ala	Val	Leu	Phe	Val	Leu	Leu	Ala	Leu	Gly	Gly	Arg	Leu	Pro	Lys	Arg	
	50					55					60					
Arg	Asp	Phe	Ser	Trp	His	Ser	Phe	Arg	Leu	Leu	Leu	Leu	Gly	Val	Thr	
65					70					75					80	
Gly	Ile	Ser	Ala	Asn	Phe	Val	Leu	Ile	Ala	Gln	Gly	Leu	His	Tyr	Ile	
				85					90					95		
Ser	Pro	Thr	Thr	Thr	Gln	Val	Leu	Trp	Gln	Ile	Ser	Pro	Phe	Thr	Met	
			100					105						110		
Ile	Val	Val	Gly	Val	Leu	Val	Phe	Lys	Asp	Arg	Met	Thr	Ala	Ala	Gln	
		115					120					125				
Lys	Ile	Gly	Leu	Val	Leu	Leu	Leu	Val	Gly	Leu	Leu	Met	Phe	Phe	Asn	
	130					135					140					
Asp	Lys	Phe	Gly	Glu	Leu	Ser	Gly	Leu	Gly	Ala	Tyr	Ala	Lys	Gly	Val	
145					150					155					160	
Leu	Leu	Cys	Ala	Ala	Gly	Ser	Met	Ala	Trp	Val	Cys	Tyr	Ala	Val	Ala	
			165						170					175		
Gln	Lys	Leu	Leu	Ser	Ala	Gln	Phe	Gly	Pro	Gln	Gln	Ile	Leu	Leu	Leu	
		180						185					190			
Ile	Tyr	Ala	Ala	Ser	Ala	Ala	Val	Phe	Leu	Pro	Phe	Ala	Glu	Pro	Ala	
		195					200					205				
His	Ile	Gly	Ser	Leu	Asp	Gly	Thr	Leu	Ala	Trp	Val	Cys	Phe	Val	Tyr	
	210					215					220					
Cys	Cys	Leu	Asn	Thr	Leu	Ile	Gly	Tyr	Gly	Ser	Phe	Gly	Glu	Ala	Leu	
225					230					235					240	
Lys	His	Trp	Glu	Ala	Ser	Lys	Val	Ser	Ala	Val	Thr	Thr	Leu	Leu	Pro	
			245						250					255		
Val	Phe	Thr	Val	Ile	Phe	Ser	Leu	Leu	Gly	His	Tyr	Val	Met	Pro	Asp	
		260						265					270			
Thr	Phe	Ala	Ala	Pro	Asp	Met	Asn	Gly	Leu	Gly	Tyr	Val	Gly	Ala	Leu	
		275					280					285				
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Lys Arg Arg

305

<210> 409

<211> 933

<212> DNA

<213> *Neisseria meningitidis*

<400> 409

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tttctgccg	cctccgtttt	ttgccggatt	ttccttcgg	ccgcaatata	ggaacggcag	180
accgccgtct	gtttgcgggt	gcaaatccag	gcagtttggc	tacaatcttc	cgcattgtct	240
tcaagaaagc	caaccatgcc	gaccgtccgt	tttaccgaat	ccgtcagcaa	acaagacctt	300
gatgctctgt	tcgagtgggc	aaaagcaagt	tacggtgcag	aaagttgctg	gaaaacgctg	360
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gacggstggc	gcaacgagtg	tttcgacctg	accgacggcg	gcggcaacct	cttgttcacg	600
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ctcatccgcc	cggtatcgca	gctgcacagc	ctgcgctccg	tcagccgggg	tgtacacaat	900
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<210> 410

<211> 312

<212> PRT

<213> *Neisseria meningitidis*

<220>

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<222> (17)..(17)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (21)..(21)

<223> Xaa= any amino acid

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<222> (31)..(31)

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<222> (34)..(34)

<223> Xaa= any amino acid

<220>

<221> misc\_feature

<222> (126)..(126)

<223> Xaa= any amino acid

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<222> (140)..(140)  
<223> Xaa= any amino acid

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<223> Xaa= any amino acid

<220>  
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<223> Xaa= any amino acid

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<223> Xaa= any amino acid

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<223> Xaa= any amino acid

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Leu Xaa Leu Pro Val Ser Cys Phe Leu Phe Pro Ala Ala Ser Val Phe  
35 40 45  
Cys Arg Ile Phe Leu Pro Ala Ala Ile Ser Glu Arg Gln Thr Ala Val  
50 55 60  
Cys Leu Arg Leu Gln Ile Gln Ala Val Trp Leu Gln Ser Ser Ala Leu  
65 70 75 80  
Ser Ser Arg Lys Pro Thr Met Pro Thr Val Arg Phe Thr Glu Ser Val  
85 90 95  
Ser Lys Gln Asp Leu Asp Ala Leu Phe Glu Trp Ala Lys Ala Ser Tyr  
100 105 110  
Gly Ala Glu Ser Cys Trp Lys Thr Leu Tyr Leu Asn Gly Xaa Pro Leu  
115 120 125  
Gly Asn Leu Ser Pro Glu Trp Val Glu Arg Val Xaa Lys Asp Trp Glu  
130 135 140  
Ala Gly Cys Xaa Glu Ser Ser Asp Gly Ile Phe Leu Asn Ala Asp Gly  
145 150 155 160

Trp Pro Asp Met Gly Gly Arg Leu Gln His Leu Ala Leu Gly Trp His  
 165 170 175  
 Cys Ala Gly Leu Leu Asp Gly Trp Arg Asn Glu Cys Phe Asp Leu Thr  
 180 185 190  
 Asp Gly Gly Gly Asn Pro Leu Phe Thr Leu Glu Arg Ala Xaa Xaa Arg  
 195 200 205  
 Pro Xaa Gly Leu Leu Ser Arg Ala Val His Leu Asn Gly Leu Thr Glu  
 210 215 220  
 Ser Asp Gly Arg Trp His Phe Trp Ile Gly Arg Arg Ser Pro His Lys  
 225 230 235 240  
 Ala Val Asp Pro Asn Lys Leu Asp Asn Thr Xaa Ala Gly Gly Val Ser  
 245 250 255  
 Gly Gly Glu Met Pro Ser Glu Ala Val Cys Arg Glu Ser Ser Glu Glu  
 260 265 270  
 Ala Gly Leu Asp Lys Thr Leu Leu Pro Leu Ile Arg Pro Val Ser Gln  
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 290 295 300  
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<210> 411  
 <211> 876  
 <212> DNA  
 <213> *Neisseria meningitidis*

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 cgcttacagc acctcgccct cggttggcac tgtgcggggc tgttggacgg ctggcgcaac 300  
 gagtgtttcg acctgaccga cggcgggcgc aaccccttgt tcacgctcga acgcgccgct 360  
 ttccgtcctt tcggactgct cagccgcgcc gtccatctca acggtctgac cgaatcggac 420  
 ggccgatggc atttctggat aggcaggcgc agtccgcaca aagcagtcga tcccaacaaa 480  
 ctcgacaata ctgccgccgg cgggtgtttcc ggcggcgaaa tgccgtctga agccgtgtgt 540  
 cgcgaaagca gcgaagaagc cggtttgatg aaaacgctgc ttccgctcat ccgcccggta 600  
 tcgcagctgc acagcctgcg ctccgtcagc cgggggtgtac acaatgaaat cctgtatgta 660  
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 tttgagaaaa tggacatcgg cggctctgtg gatgccatgt tgtcgggaaa catgatgcac 780  
 gacgcgcaac tggttacgct ggacgcgttt tgccgttacg gtctgattga tgccgcccat 840  
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<210> 412  
 <211> 291  
 <212> PRT  
 <213> *Neisseria meningitidis*

[illegible]



<210> 413  
 <211> 876  
 <212> DNA  
 <213> *Neisseria meningitidis*

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 cctttgggca atctgtcgcc ggaatgggag gagcgcgtca aaaaagactg ggaggcaggc 180  
 tgctcggagt cttcagacgg cattttcctg aatgcggacg gctggccaga tatgggcaga 240  
 cgcttgacgc acctcgcccg aatatggaaa gaagcgggac tgcttcacgg ctggcgcgac 300  
 gagtggtttcg acctgaccga cggcggcagc aatcccttgt tcgcgctcga acgcgcgcgt 360  
 ttccgtccgt tcggactgct cagccgcgcc gtccatctca acggtttggt cgaatcggac 420  
 ggccgatggc atttctggat aggcaggcgc agtccgcaca aagcagtcga tcccgcacaa 480  
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 tttgagaaaa tggacatcgg cggctctgtt gctgccatgt tgccgggaaa catgatgcac 780  
 gacgcgcaac tggttacgct ggacgcgttt tgccgttacg gtctgattga tgccgcccat 840  
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 <211> 291  
 <212> PRT  
 <213> *Neisseria meningitidis*

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 35 40 45  
 Trp Ala Glu Arg Val Lys Lys Asp Trp Glu Ala Gly Cys Ser Glu Ser  
 50 55 60  
 Ser Asp Gly Ile Phe Leu Asn Ala Asp Gly Trp Pro Asp Met Gly Arg  
 65 70 75 80  
 Arg Leu Gln His Leu Ala Arg Ile Trp Lys Glu Ala Gly Leu Leu His  
 85 90 95  
 Gly Trp Arg Asp Glu Cys Phe Asp Leu Thr Asp Gly Gly Ser Asn Pro  
 100 105 110  
 Leu Phe Ala Leu Glu Arg Ala Ala Phe Arg Pro Phe Gly Leu Leu Ser  
 115 120 125  
 Arg Ala Val His Leu Asn Gly Leu Val Glu Ser Asp Gly Arg Trp His  
 130 135 140

Phe Trp Ile Gly Arg Arg Ser Pro His Lys Ala Val Asp Pro Asp Lys  
 145 150 155 160  
 Leu Asp Asn Thr Ala Ala Gly Gly Val Ser Ser Gly Glu Leu Pro Ser  
 165 170 175  
 Glu Thr Val Cys Arg Glu Ser Ser Glu Glu Ala Gly Leu Asp Lys Thr  
 180 185 190  
 Leu Leu Pro Leu Ile Arg Pro Val Ser Gln Leu His Ser Leu Arg Pro  
 195 200 205  
 Val Ser Arg Gly Val His Asn Glu Ile Leu Tyr Val Phe Asp Ala Val  
 210 215 220  
 Leu Pro Glu Thr Phe Leu Pro Glu Asn Gln Asp Gly Glu Val Ala Gly  
 225 230 235 240  
 Phe Glu Lys Met Asp Ile Gly Gly Leu Leu Ala Ala Met Leu Ser Gly  
 245 250 255  
 Asn Met Met His Asp Ala Gln Leu Val Thr Leu Asp Ala Phe Cys Arg  
 260 265 270  
 Tyr Gly Leu Ile Asp Ala Ala His Pro Leu Ser Glu Trp Leu Asp Gly  
 275 280 285  
 Ile Arg Leu  
 290

<210> 415  
 <211> 8  
 <212> DNA  
 <213> Neillia sinensis

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 415  
 nnnnnnnn

8

<210> 416  
 <211> 372  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 416  
 Met Val Ala Arg Arg Ala His Asn Pro Lys Val Val Gly Ser Asn Pro  
 1 5 10 15  
 Ala Pro Ala Thr Lys Tyr Gln Thr Pro Arg Phe Asn Ala Glu Gly Val  
 20 25 30  
 Leu Phe Phe Leu Phe Pro Ala Ala Ser Val Phe Cys Arg Ile Phe Leu

35	40	45
Pro Ala Ala Ile Ser Glu Arg Gln Ala Ala Val Cys Leu Arg Leu Gln 50 55 60		
Ile Gln Ala Val Trp Leu Gln Ser Ser Ala Leu Cys Ser Arg Lys Pro 65 70 75 80		
Ala Met Pro Thr Val Arg Phe Thr Glu Ser Val Ser Lys Gln Asp Leu 85 90 95		
Asp Ala Leu Phe Glu Arg Ala Lys Ala Ser Tyr Gly Ala Glu Ser Cys 100 105 110		
Trp Lys Thr Leu Tyr Leu Asn Arg Leu Pro Leu Gly Asn Leu Ser Pro 115 120 125		
Glu Trp Ala Glu Arg Ile Lys Lys Asp Trp Glu Ala Gly Cys Ser Glu 130 135 140		
Ser Ser Asn Gly Ile Phe Leu Asn Ala Asp Gly Trp Pro Asp Met Gly 145 150 155 160		
Gly Arg Leu Gln His Leu Ala Arg Thr Trp Asn Lys Ala Gly Leu Leu 165 170 175		
His Gly Trp Arg Asn Glu Cys Phe Asp Leu Thr Asp Gly Gly Gly Asn 180 185 190		
Pro Leu Phe Thr Leu Glu Arg Ala Ala Phe Arg Pro Phe Gly Leu Leu 195 200 205		
Ile Arg Ala Val His Leu Asn Gly Leu Val Glu Ser Asn Gly Arg Trp 210 215 220		
His Phe Trp Ile Gly Arg Arg Ser Pro His Lys Ala Val Asp Pro Gly 225 230 235 240		
Lys Leu Asp Asn Ile Ala Gly Gly Gly Val Ser Gly Gly Glu Met Pro 245 250 255		
Ser Glu Ala Val Cys Arg Glu Ser Ser Glu Glu Ala Gly Leu Asp Lys 260 265 270		
Thr Leu Phe Pro Leu Ile Arg Pro Val Ser Arg Leu His Ser Leu Arg 275 280 285		
Pro Val Ser Arg Gly Val His Asn Glu Ile Leu Tyr Val Phe Asp Ala 290 295 300		
Val Leu Pro Glu Thr Phe Leu Pro Glu Asn Gln Asp Gly Glu Val Ala 305 310 315 320		
Gly Phe Glu Lys Met Asp Ile Gly Gly Leu Leu Asp Ala Met Leu Ser 325 330 335		

Lys Asn Met Met His Asp Ala Gln Leu Val Thr Leu Asp Ala Phe Tyr  
340 345 350

Arg Tyr Gly Leu Ile Asp Ala Ala His Pro Leu Ser Glu Trp Leu Asp  
355 360 365

Gly Ile Arg Leu  
370

<210> 417  
<211> 876  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 417  
atgccgaccg tccgtttttac cgaatccgtc agcaaacaag accttgatgc cctgttcgag 60  
cgggcaaaaag caagttacgg tgccgaaagt tgctggaaaa cgctgtatct gaaccgtctt 120  
cctttgggca atctgtcgcc ggaatgggct gagcgcatca aaaaagactg ggaggcaggc 180  
tgctccgagt cttcagacgg catttttctg aatgcggacg gctggccgga tatgggcgga 240  
cgcttgacgc acctcgccc cacaatggaac aaggcggggc tgcttcacgg atggcgcaac 300  
gagtggtttcg acctgaccga cggcgggcggc aacccttgt tcacgctcga acgcgccgct 360  
ttccgtccgt tcggactact cagccgcgcc gtccatctca acggtttggt cgaatcgaac 420  
ggcagatggc atttttggat aggcaggcgc agtccgcaca aagcagtcga tcccggcaag 480  
ctcgacaata ttgccggcgg cgggtgtttcc ggcggcgaaa tgccgtctga agccgtgtgc 540  
cgcgaaagca gcgaagaagc cgggtttggat aaaacgctgt ttccgctcat ccgcccagta 600  
tcgcggctgc acagccttcg ccccgtcagc cgaggtgtgc acaatgaaat cctgtatgtg 660  
ttcgatgccg tcctgcccga aaccttctg cctgaaaatc aggatggcga ggtagcgggt 720  
tttgaagaaga tggacattgg cggcctattg gatgccatgt tgcgaaaaa catgatgcac 780  
gacgcgaac tggttacgct ggacgcgttt taccgttacg gtctgattga tgccgcccac 840  
ccgctgtccg agtggctgga cggcatacgt ttatag 876

<210> 418  
<211> 291  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 418  
Met Pro Thr Val Arg Phe Thr Glu Ser Val Ser Lys Gln Asp Leu Asp  
1 5 10 15  
Ala Leu Phe Glu Arg Ala Lys Ala Ser Tyr Gly Ala Glu Ser Cys Trp  
20 25 30  
Lys Thr Leu Tyr Leu Asn Arg Leu Pro Leu Gly Asn Leu Ser Pro Glu  
35 40 45  
Trp Ala Glu Arg Ile Lys Lys Asp Trp Glu Ala Gly Cys Ser Glu Ser  
50 55 60  
Ser Asp Gly Ile Phe Leu Asn Ala Asp Gly Trp Pro Asp Met Gly Gly  
65 70 75 80  
Arg Leu Gln His Leu Ala Arg Thr Trp Asn Lys Ala Gly Leu Leu His  
85 90 95  
Gly Trp Arg Asn Glu Cys Phe Asp Leu Thr Asp Gly Gly Gly Asn Pro

100					105					110						
Leu	Phe	Thr	Leu	Glu	Arg	Ala	Ala	Phe	Arg	Pro	Phe	Gly	Leu	Leu	Ser	
115					120					125						
Arg	Ala	Val	His	Leu	Asn	Gly	Leu	Val	Glu	Ser	Asn	Gly	Arg	Trp	His	
130					135					140						
Phe	Trp	Ile	Gly	Arg	Arg	Ser	Pro	His	Lys	Ala	Val	Asp	Pro	Gly	Lys	
145					150					155					160	
Leu	Asp	Asn	Ile	Ala	Gly	Gly	Gly	Val	Ser	Gly	Gly	Glu	Met	Pro	Ser	
165					170					175						
Glu	Ala	Val	Cys	Arg	Glu	Ser	Ser	Glu	Glu	Ala	Gly	Leu	Asp	Lys	Thr	
180					185					190						
Leu	Phe	Pro	Leu	Ile	Arg	Pro	Val	Ser	Arg	Leu	His	Ser	Leu	Arg	Pro	
195					200					205						
Val	Ser	Arg	Gly	Val	His	Asn	Glu	Ile	Leu	Tyr	Val	Phe	Asp	Ala	Val	
210					215					220						
Leu	Pro	Glu	Thr	Phe	Leu	Pro	Glu	Asn	Gln	Asp	Gly	Glu	Val	Ala	Gly	
225					230					235					240	
Phe	Glu	Lys	Met	Asp	Ile	Gly	Gly	Leu	Leu	Asp	Ala	Met	Leu	Ser	Lys	
245					250					255						
Asn	Met	Met	His	Asp	Ala	Gln	Leu	Val	Thr	Leu	Asp	Ala	Phe	Tyr	Arg	
260					265					270						
Tyr	Gly	Leu	Ile	Asp	Ala	Ala	His	Pro	Leu	Ser	Glu	Trp	Leu	Asp	Gly	
275					280					285						
Ile	Arg	Leu														
290																

<210> 419  
 <211> 566  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 419	atgaatagac	ccaagcaacc	cttcttccgt	cccgaagtcg	ccgttgcccg	ccaaaccagc	60
	ctgacgggta	aagtgattct	gacacgaccg	ttgtcatttt	ccctatggac	gacatttgca	120
	tcgatatctg	cgttattgat	tatcctgttt	ttgatatttg	gtaactatac	gcgaaagaca	180
	acagtggagg	gacaaatttt	acctgcatcg	ggcgtaatca	gggtgtatgc	accggatacg	240
	rgkacaatta	cagcgaaatt	cgtggaagat	ggmsaaaagg	ttaaggctgg	cgacaagcta	300
	tttgcgcttt	cgacctcacg	tttcggcgca	ggaggtagcg	tcgagcagca	gttgaaaacg	360
	gaggcagttt	tgaagaaaac	gttggcagaa	caggaactgg	gtcgtctgaa	gctgatacac	420
	gggaatgaaa	cgcgcacgct	ttaaagcaact	gtcgaacggt	tggaaaacca	ggaactccat	480
	atttcgcaac	agatagacgg	tcagaaaagg	cgcattagac	ttgcggaaga	aatgttgcag	540
	aaatatcggt	tcctatccgc	caatga				566

<210> 420

<211> 188  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (81)..(81)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (92)..(92)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (187)..(187)  
<223> Xaa= any amino acid

<400> 420  
Met Asn Arg Pro Lys Gln Pro Phe Phe Arg Pro Glu Val Ala Val Ala  
1 5 10 15  
Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser  
20 25 30  
Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile  
35 40 45  
Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Val Glu Gly  
50 55 60  
Gln Ile Leu Pro Ala Ser Gly Val Ile Arg Val Tyr Ala Pro Asp Thr  
65 70 75 80  
Xaa Thr Ile Thr Ala Lys Phe Val Glu Asp Gly Xaa Lys Val Lys Ala  
85 90 95  
Gly Asp Lys Leu Phe Ala Leu Ser Thr Ser Arg Phe Gly Ala Gly Gly  
100 105 110  
Ser Val Gln Gln Gln Leu Lys Thr Glu Ala Val Leu Lys Lys Thr Leu  
115 120 125  
Ala Glu Gln Glu Leu Gly Arg Leu Lys Leu Ile His Gly Asn Glu Thr  
130 135 140  
Arg Ser Leu Lys Ala Thr Val Glu Arg Leu Glu Asn Gln Glu Leu His  
145 150 155 160  
Ile Ser Gln Gln Ile Asp Gly Gln Lys Arg Arg Ile Arg Leu Ala Glu  
165 170 175  
Glu Met Leu Gln Lys Tyr Arg Phe Leu Ser Xaa Gln  
180 185

<210> 421  
<211> 717  
<212> DNA  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (21)..(21)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (252)..(252)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (262)..(262)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (695)..(696)  
<223> N= Unknown

<400> 421  
atgaatagac ccaagcaacc nttcttccgt cccgaagtcg ccgttgcccg ccaaaccagc 60  
ctgacgggta aagtgattct gacacgaccg ttgtcatttt ccctatggac gacatttgca 120  
tcgatatctg cgttattgat tatcctgttt ttgatatttg gtaactatac gcgaaagaca 180  
acagtggagg gacaaatttt acctgcatcg ggcgtaatca ggggtgtatgc accggatacg 240  
gggacaatta cngcgaaatt cntggaagat ggagaaaagg ttaaggctgg cgacaagcta 300  
tttgcgcttt cgacctcacg tttcggcgca ggagatagcg tgcagcagca gttgaaaacg 360  
gaggcagttt tgaagaaaac gttggcagaa caggaactgg gtcgtctgaa gctgatacac 420  
gggaatgaaa cgcgcagcct taaagcaact gtcgaacgtt tggaaaacca ggaactccat 480  
atttcgcaac agatagacgg tcagaaaagg cgcattagac ttgcggaaga aatgttgacg 540  
aaatatcggt tcctatccgc caatgatgca gtgccaaaac aagaaatgat gaatgtcaag 600  
gcagagcttt tagagcagaa agccaaactt gatgcctacc gccgagaaga agtcgggctg 660  
cttcaggaaa tccgcacgca gaatctgaca ttggnnagcc tcccccaagc ggcatga 717

<210> 422  
<211> 238  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (88)..(88)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (232)..(232)  
<223> Xaa= any amino acid

<400> 422  
Met Asn Arg Pro Lys Gln Pro Phe Phe Arg Pro Glu Val Ala Val Ala

1	5	10	15
Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser	20	25	30
Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile	35	40	45
Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Val Glu Gly	50	55	60
Gln Ile Leu Pro Ala Ser Gly Val Ile Arg Val Tyr Ala Pro Asp Thr	65	70	75
Gly Thr Ile Thr Ala Lys Phe Xaa Glu Asp Gly Glu Lys Val Lys Ala	85	90	95
Gly Asp Lys Leu Phe Ala Leu Ser Thr Ser Arg Phe Gly Ala Gly Asp	100	105	110
Ser Val Gln Gln Gln Leu Lys Thr Glu Ala Val Leu Lys Lys Thr Leu	115	120	125
Ala Glu Gln Glu Leu Gly Arg Leu Lys Leu Ile His Gly Asn Glu Thr	130	135	140
Arg Ser Leu Lys Ala Thr Val Glu Arg Leu Glu Asn Gln Glu Leu His	145	150	155
Ile Ser Gln Gln Ile Asp Gly Gln Lys Arg Arg Ile Arg Leu Ala Glu	165	170	175
Glu Met Leu Gln Lys Tyr Arg Phe Leu Ser Ala Asn Asp Ala Val Pro	180	185	190
Lys Gln Glu Met Met Asn Val Lys Ala Glu Leu Leu Glu Gln Lys Ala	195	200	205
Lys Leu Asp Ala Tyr Arg Arg Glu Glu Val Gly Leu Leu Gln Glu Ile	210	215	220
Arg Thr Gln Asn Leu Thr Leu Xaa Ser Leu Pro Gln Ala Ala	225	230	235

<210> 423  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 423  
 nnnnnnnn



<210> 424  
 <211> 188  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 424  
 Met Asn Arg Pro Lys Gln Pro Phe Phe Arg Pro Glu Val Ala Ile Ala  
 1 5 10 15  
 Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser  
 20 25 30  
 Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile  
 35 40 45  
 Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Met Glu Gly  
 50 55 60  
 Gln Ile Leu Pro Ala Ser Gly Val Ile Arg Val Tyr Ala Pro Asp Thr  
 65 70 75 80  
 Gly Thr Ile Thr Ala Lys Phe Val Glu Asp Gly Glu Lys Val Lys Ala  
 85 90 95  
 Gly Asp Lys Leu Phe Ala Leu Ser Thr Ser Arg Phe Gly Ala Gly Gly  
 100 105 110  
 Ser Val Gln Gln Gln Leu Lys Thr Glu Ala Val Leu Lys Lys Thr Leu  
 115 120 125  
 Ala Glu Gln Glu Leu Gly Arg Leu Lys Leu Ile His Glu Asn Glu Thr  
 130 135 140  
 Arg Ser Leu Lys Ala Thr Val Glu Arg Leu Glu Asn Gln Lys Leu His  
 145 150 155 160  
 Ile Ser Gln Gln Ile Asp Gly Gln Lys Arg Arg Ile Arg Leu Ala Glu  
 165 170 175  
 Glu Met Leu Arg Lys Tyr Arg Phe Leu Ser Ala Gln  
 180 185

<210> 425  
 <211> 545  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 425  
 atgctgaata ctttttttgc cgtattgggc ggctgcctgc tgctttgccg tgcggcaaat 60  
 ccgtaaatac ggcggtacag ccgcaaaacg cggtacaaag cgcgccgaaa ccggttttca 120  
 aagtcataata ttcgacaat acggcgattg ccggttttga tttgggacaa agcagcgaag 180  
 gcaaaaccaa cgacggcaaa aaacaaatca gttatccgat taaaggcttg ccggaacaaa 240  
 atgttatccg actgatcggc aagcatcccg gcgacttggg agccgtcagc ggcaaatgta 300  
 tggaaaccga tgataaggac agtccggcag gttgggcaga aaacggcgtg tgccatacct 360  
 tgtttgcaa actggtgggc aatatcgccg aagacggcgg caaactgacg gattacctag 420  
 tttcgcatgc cgccctgcaa ccctatcagg caggcaaaag cggctatgcc gccgtgcaga 480

acggacgcta tgtgctggaa atcgacagcg aaggggcggt ttatttccgc cgccgccatt 540  
attga 545

<210> 426  
<211> 181  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (15)..(15)  
<223> Xaa= any amino acid

<400> 426  
Met Leu Asn Thr Phe Phe Ala Val Leu Gly Gly Cys Leu Leu Xaa Leu  
1 5 10 15  
Pro Cys Gly Lys Ser Val Asn Thr Ala Val Gln Pro Gln Asn Ala Val  
20 25 30  
Gln Ser Ala Pro Lys Pro Val Phe Lys Val Ile Tyr Ile Asp Asn Thr  
35 40 45  
Ala Ile Ala Gly Leu Asp Leu Gly Gln Ser Ser Glu Gly Lys Thr Asn  
50 55 60  
Asp Gly Lys Lys Gln Ile Ser Tyr Pro Ile Lys Gly Leu Pro Glu Gln  
65 70 75 80  
Asn Val Ile Arg Leu Ile Gly Lys His Pro Gly Asp Leu Glu Ala Val  
85 90 95  
Ser Gly Lys Cys Met Glu Thr Asp Asp Lys Asp Ser Pro Ala Gly Trp  
100 105 110  
Ala Glu Asn Gly Val Cys His Thr Leu Phe Ala Lys Leu Val Gly Asn  
115 120 125  
Ile Ala Glu Asp Gly Gly Lys Leu Thr Asp Tyr Leu Val Ser His Ala  
130 135 140  
Ala Leu Gln Pro Tyr Gln Ala Gly Lys Ser Gly Tyr Ala Ala Val Gln  
145 150 155 160  
Asn Gly Arg Tyr Val Leu Glu Ile Asp Ser Glu Gly Ala Phe Tyr Phe  
165 170 175  
Arg Arg Arg His Tyr  
180

<210> 427  
<211> 546  
<212> DNA  
<213> Neisseria meningitidis  
<400> 427

atgctgaaaa	catcttttgc	cgtattgggc	ggctgcctgc	tgcttgccgc	ctgcggcaaa	60
tccgaaaata	cggcggaaca	gccgcaaac	gcggtacaaa	gcgcgccgaa	accggttttc	120
aaagtcaaat	atatacgaac	tacggcgatt	gccggtttgg	atttgggaca	aagcagcgaa	180
ggcaaaacca	acgacggcaa	aaaacaaatc	agttatccga	ttaaaggctt	gccggaacaa	240
aatgttatcc	gactgatcgg	caagcatccc	ggcgacttgg	aagccgtcag	cggcaaattgt	300
atggaaaccg	atgataagga	cagtccggca	ggttgggcag	aaaacggcgt	gtgccatacc	360
ttgtttgcc	aactgggtggg	caatatcgcc	gaagacggcg	gcaaactgac	ggattaccta	420
gtttcgcatg	ccgccctgca	accctatcag	gcaggcaaaa	gcggctatgc	cgccgtgcag	480
aacggacgct	atgtgctgga	aatcgacagc	gaaggggcgt	tttatttccg	ccgccgccat	540
tattga						546

<210> 428  
 <211> 181  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 428  
 Met Leu Lys Thr Ser Phe Ala Val Leu Gly Gly Cys Leu Leu Leu Ala  
 1 5 10 15  
 Ala Cys Gly Lys Ser Glu Asn Thr Ala Glu Gln Pro Gln Asn Ala Val  
 20 25 30  
 Gln Ser Ala Pro Lys Pro Val Phe Lys Val Lys Tyr Ile Asp Asn Thr  
 35 40 45  
 Ala Ile Ala Gly Leu Asp Leu Gly Gln Ser Ser Glu Gly Lys Thr Asn  
 50 55 60  
 Asp Gly Lys Lys Gln Ile Ser Tyr Pro Ile Lys Gly Leu Pro Glu Gln  
 65 70 75 80  
 Asn Val Ile Arg Leu Ile Gly Lys His Pro Gly Asp Leu Glu Ala Val  
 85 90 95  
 Ser Gly Lys Cys Met Glu Thr Asp Asp Lys Asp Ser Pro Ala Gly Trp  
 100 105 110  
 Ala Glu Asn Gly Val Cys His Thr Leu Phe Ala Lys Leu Val Gly Asn  
 115 120 125  
 Ile Ala Glu Asp Gly Gly Lys Leu Thr Asp Tyr Leu Val Ser His Ala  
 130 135 140  
 Ala Leu Gln Pro Tyr Gln Ala Gly Lys Ser Gly Tyr Ala Ala Val Gln  
 145 150 155 160  
 Asn Gly Arg Tyr Val Leu Glu Ile Asp Ser Glu Gly Ala Phe Tyr Phe  
 165 170 175  
 Arg Arg Arg His Tyr  
 180

<210> 429  
 <211> 546  
 <212> DNA

<400> 429

<210> 430

<211> 181

<212> PRT

<400> 430

[illegible]

<210> 431  
 <211> 695  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 431  
 atggaagatt tatatataat actcgctttg ggtttggttg cgatgattgc cggatttatc 60  
 gatgcgattg cgggcggggg tggtttgatt acgctgcccg cactcttggt ggcaggatt 120  
 cctcccgtgt cggcaattgc caccaacaag ctgcaagcag ccgctgctac gttttcagct 180  
 acggtttctt ttgcacgcaa aggtttgatt gattggaaga aaggtctccc gattgccgca 240  
 gcatcgtttg taggcggcgt ggccgggtgca ttatcgggtca gcttggtttc caaagatatt 300  
 ctgctggcgg tcgtgccggg tttggtgata tttgtcgcac tgtattttgt gttttcgccc 360  
 aagctcgacg gcagtaagga aggcaaagcc agaatgtctt tttttctggt cgggctgacg 420  
 gtcgcaccgc ttttggtttt ttacgacggg gtgttcggac cgggtgtcgg ctcgtttttt 480  
 ctgattgcct ttattgtttt gtcgggtgc aagctgttga acgcgatgtc ttacaccaaa 540  
 ttggcgaacg ttgcctgcaa tcttggttcg ctatcggtat tcttgctgca cggttcgatt 600  
 attttcccgga ttgcggcaac gatggcgggtc ggtgcgtttg tcggtgcgaa tttagggtgcg 660  
 agatttgccg tacgcttcgg ttcgaagctg attaa 695

<210> 432  
 <211> 231  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (142)..(142)  
 <223> Xaa= any amino acid

<400> 432  
 Met Glu Asp Leu Tyr Ile Ile Leu Ala Leu Gly Leu Val Ala Met Ile  
 1 5 10 15  
 Ala Gly Phe Ile Asp Ala Ile Ala Gly Gly Gly Gly Leu Ile Thr Leu  
 20 25 30  
 Pro Ala Leu Leu Leu Ala Gly Ile Pro Pro Val Ser Ala Ile Ala Thr  
 35 40 45  
 Asn Lys Leu Gln Ala Ala Ala Thr Phe Ser Ala Thr Val Ser Phe  
 50 55 60  
 Ala Arg Lys Gly Leu Ile Asp Trp Lys Lys Gly Leu Pro Ile Ala Ala  
 65 70 75 80  
 Ala Ser Phe Val Gly Gly Val Ala Gly Ala Leu Ser Val Ser Leu Val  
 85 90 95  
 Ser Lys Asp Ile Leu Leu Ala Val Val Pro Val Leu Leu Ile Phe Val  
 100 105 110  
 Ala Leu Tyr Phe Val Phe Ser Pro Lys Leu Asp Gly Ser Lys Glu Gly  
 115 120 125  
 Lys Ala Arg Met Ser Phe Phe Leu Phe Gly Leu Thr Val Xaa Thr Ala  
 130 135 140

Phe Gly Phe Leu Arg Arg Cys Val Arg Thr Gly Cys Arg Leu Val Phe  
 145 150 155 160

Ser Asp Cys Leu Tyr Cys Phe Ala Arg Leu Gln Ala Val Glu Arg Asp  
 165 170 175

Val Leu His Gln Ile Gly Glu Arg Cys Leu Gln Ser Trp Phe Ala Ile  
 180 185 190

Gly Ile Pro Ala Ala Arg Phe Asp Tyr Phe Pro Asp Cys Gly Asn Asp  
 195 200 205

Gly Gly Arg Cys Val Cys Arg Cys Glu Phe Arg Cys Glu Ile Cys Arg  
 210 215 220

Thr Leu Arg Phe Glu Ala Asp  
 225 230

<210> 433  
 <211> 789  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 433  
 atggaagatt tatatataat actcgctttg ggtttggttg cgatgattgc cggattttatc 60  
 gatgcgattg cgggcggggg tggtttgatt acgctgcccg cactcttggt ggcaggtatt 120  
 cctcccgtgt cggcaattgc caccaacaag ctgcaagcag ccgctgctac gttttcagct 180  
 acggtttctt ttgcacgcaa aggtttgatt gattggaaga aaggtctccc gattgcccga 240  
 gcatcgtttg taggcggcgt ggccggtgca ttatcggtca gcttggtttc caaagatatt 300  
 ctgctggcgg tcgtgccggt tttgttgata tttgtcgcac tgtattttgt gttttcgcgc 360  
 aagctcgacg gcagtaagga aggcaaagcc agaatgtctt tttttctggt cgggctgacg 420  
 gtgcgaccgc ttttggtttt ttacgacggt gtgttcggac cgggtgtcgg ctcgtttttt 480  
 ctgattgcct ttattgtttt gctcggctgc aagctgttga acgcgatgtc ttacaccaaa 540  
 ttggcgaacg ttgctgcaa tcttggttcg ctatcggtat tcctgctgca cggttcgatt 600  
 attttcccga ttgcggcaac gatggcggtc ggtgcgtttg tcgggtgcgaa tttaggtgcg 660  
 agatttgccg tccgcttcgg ttcgaagctg attaagccgc tgctgattgt catcagcatt 720  
 tcgatggctg tgaaattggt gatagacgag agaaatccgc tgtatcagat gattgtttcg 780  
 atgttttaa 789

<210> 434  
 <211> 262  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 434  
 Met Glu Asp Leu Tyr Ile Ile Leu Ala Leu Gly Leu Val Ala Met Ile  
 1 5 10 15  
 Ala Gly Phe Ile Asp Ala Ile Ala Gly Gly Gly Gly Leu Ile Thr Leu  
 20 25 30  
 Pro Ala Leu Leu Leu Ala Gly Ile Pro Pro Val Ser Ala Ile Ala Thr  
 35 40 45  
 Asn Lys Leu Gln Ala Ala Ala Ala Thr Phe Ser Ala Thr Val Ser Phe  
 50 55 60

Ala Arg Lys Gly Leu Ile Asp Trp Lys Lys Gly Leu Pro Ile Ala Ala  
 65 70 75 80  
 Ala Ser Phe Val Gly Gly Val Ala Gly Ala Leu Ser Val Ser Leu Val  
 85 90 95  
 Ser Lys Asp Ile Leu Leu Ala Val Val Pro Val Leu Leu Ile Phe Val  
 100 105 110  
 Ala Leu Tyr Phe Val Phe Ser Pro Lys Leu Asp Gly Ser Lys Glu Gly  
 115 120 125  
 Lys Ala Arg Met Ser Phe Phe Leu Phe Gly Leu Thr Val Ala Pro Leu  
 130 135 140  
 Leu Gly Phe Tyr Asp Gly Val Phe Gly Pro Gly Val Gly Ser Phe Phe  
 145 150 155 160  
 Leu Ile Ala Phe Ile Val Leu Leu Gly Cys Lys Leu Leu Asn Ala Met  
 165 170 175  
 Ser Tyr Thr Lys Leu Ala Asn Val Ala Cys Asn Leu Gly Ser Leu Ser  
 180 185 190  
 Val Phe Leu Leu His Gly Ser Ile Ile Phe Pro Ile Ala Ala Thr Met  
 195 200 205  
 Ala Val Gly Ala Phe Val Gly Ala Asn Leu Gly Ala Arg Phe Ala Val  
 210 215 220  
 Arg Phe Gly Ser Lys Leu Ile Lys Pro Leu Leu Ile Val Ile Ser Ile  
 225 230 235 240  
 Ser Met Ala Val Lys Leu Leu Ile Asp Glu Arg Asn Pro Leu Tyr Gln  
 245 250 255  
 Met Ile Val Ser Met Phe  
 260

<210> 435  
 <211> 789  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 435  
 atggaagatt tatacataat actcgctttg ggtttggttg cgatgattgc cggatttatac 60  
 gatgcgattg cgggtggggg tggtttgatt acgctgcctg cactcttggt ggcaggtatt 120  
 cctcccggtg cggcaattgc caccaacaag ctgcaagcag ccgctgctac gttttcggct 180  
 acggtttctt ttgcacgcaa aggtttgatt gattggaaga aaggtctccc gattgcggca 240  
 gcatcgtttg caggcggcgt ggtcgggtgca ttatcggtca gcttggttc caaagatatt 300  
 ctgctggcgg tcgtgccggt tttgttgata tttgtcgcgc tgtattttgt gttttcgccc 360  
 aagctcgacg gcagtaagga aggcaaagcc agaatgtctt tttttctggt cggctcgacg 420  
 gttgcaccac ttttggtttt ttacgacggt gtgttcggac cgggtgtcgg ctcgtttttt 480  
 ctgattgcct ttattgtttt gctcggctgc aagctgttga acgcgatgtc ttacaccaa 540  
 ttggcgaacg ttgcctgcaa tcttggttcg ctatcggtat tcctgctgca cggttcgatt 600  
 attttcccga ttgcggcaac gatggcggtc ggtgcgtttg tcggtgcgaa tttaggtgcg 660

agatttgccg	tccgcttcgg	ttcgaagctg	attaagccgc	tgctgattgt	catcagcatt	720
tcgatggctg	tgaaattgtt	gatagacgag	agaaatccgc	tgtatcagat	gattgtttcg	780
atgttttaa						789

<210> 436  
 <211> 262  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 436  
 Met Glu Asp Leu Tyr Ile Ile Leu Ala Leu Gly Leu Val Ala Met Ile  
 1 5 10 15  
 Ala Gly Phe Ile Asp Ala Ile Ala Gly Gly Gly Gly Leu Ile Thr Leu  
 20 25 30  
 Pro Ala Leu Leu Leu Ala Gly Ile Pro Pro Val Ser Ala Ile Ala Thr  
 35 40 45  
 Asn Lys Leu Gln Ala Ala Ala Ala Thr Phe Ser Ala Thr Val Ser Phe  
 50 55 60  
 Ala Arg Lys Gly Leu Ile Asp Trp Lys Lys Gly Leu Pro Ile Ala Ala  
 65 70 75 80  
 Ala Ser Phe Ala Gly Gly Val Val Gly Ala Leu Ser Val Ser Leu Val  
 85 90 95  
 Ser Lys Asp Ile Leu Leu Ala Val Val Pro Val Leu Leu Ile Phe Val  
 100 105 110  
 Ala Leu Tyr Phe Val Phe Ser Pro Lys Leu Asp Gly Ser Lys Glu Gly  
 115 120 125  
 Lys Ala Arg Met Ser Phe Phe Leu Phe Gly Leu Thr Val Ala Pro Leu  
 130 135 140  
 Leu Gly Phe Tyr Asp Gly Val Phe Gly Pro Gly Val Gly Ser Phe Phe  
 145 150 155 160  
 Leu Ile Ala Phe Ile Val Leu Leu Gly Cys Lys Leu Leu Asn Ala Met  
 165 170 175  
 Ser Tyr Thr Lys Leu Ala Asn Val Ala Cys Asn Leu Gly Ser Leu Ser  
 180 185 190  
 Val Phe Leu Leu His Gly Ser Ile Ile Phe Pro Ile Ala Ala Thr Met  
 195 200 205  
 Ala Val Gly Ala Phe Val Gly Ala Asn Leu Gly Ala Arg Phe Ala Val  
 210 215 220  
 Arg Phe Gly Ser Lys Leu Ile Lys Pro Leu Leu Ile Val Ile Ser Ile  
 225 230 235 240  
 Ser Met Ala Val Lys Leu Leu Ile Asp Glu Arg Asn Pro Leu Tyr Gln



245

250

255

Met Ile Val Ser Met Phe  
260

<210> 437  
<211> 8  
<212> DNA  
<213> Neisseria gonorrhoeae

<220>  
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<222> (1)..(8)  
<223> N= Unknown

<400> 437  
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<210> 438  
<211> 231  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 438

Met Glu Asp Leu Tyr Ile Ile Leu Ala Leu Gly Leu Val Ala Met Ile  
1 5 10 15

Ala Gly Phe Ile Asp Ala Ile Ala Gly Gly Gly Gly Leu Ile Thr Leu  
20 25 30

Pro Ala Leu Leu Leu Ala Gly Ile Pro Pro Val Ser Ala Ile Ala Thr  
35 40 45

Asn Lys Leu Gln Ala Ala Ala Ala Thr Phe Ser Ala Thr Val Ser Phe  
50 55 60

Ala Arg Lys Gly Leu Ile Asp Trp Lys Lys Gly Leu Pro Ile Ala Ala  
65 70 75 80

Ala Ser Phe Ala Gly Gly Val Val Gly Ala Leu Ser Val Ser Leu Val  
85 90 95

Ser Lys Asp Ile Leu Leu Ala Val Val Pro Val Leu Leu Ile Phe Val  
100 105 110

Ala Leu Tyr Phe Val Phe Ser Pro Lys Leu Asp Gly Ser Lys Glu Gly  
115 120 125

Lys Ala Arg Met Ser Phe Phe Leu Phe Gly Leu Thr Val Ala Thr Ala  
130 135 140

Phe Gly Phe Leu Arg Arg Cys Val Arg Thr Gly Cys Arg Leu Val Phe  
145 150 155 160

Ser Asp Cys Leu Tyr Cys Phe Ala Arg Leu Gln Ala Val Glu Arg Asp  
165 170 175

Val Leu His Gln Ile Gly Glu Arg Cys Leu Gln Ser Trp Phe Ala Ile  
180 185 190

Gly Ile Pro Ala Ala Arg Phe Asp Tyr Phe Pro Asp Cys Gly Asn Asp  
195 200 205

Gly Gly Arg Cys Val Cys Arg Cys Glu Phe Arg Cys Glu Ile Cys Arg  
210 215 220

Pro Leu Arg Phe Glu Ala Asp  
225 230

<210> 439  
<211> 789  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 439  
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gatgcgattg cgggcggggg tggtttgatt acgctgcctg cactcttggt ggcaggtatt 120  
cctcccgtgt cggcaattgc caccaacaag ctgcaagcag ccgctgctac gttttcggct 180  
acggtttctt ttgcacgcaa aggtttgatt gattggaaga aaggtctccc gattgccgca 240  
gcatcgtttg caggcggcgt ggtcgggtgca ttatcggtca gcttggtttc caaagatatt 300  
ttgctggcgg tcgtgccggg tttggtgata tttgtcgcgc tgtattttgt gttttcgcgc 360  
aagctcgacg gcagtaagga aggcaaagcc agaattgtct tttttctatt cgggctgacg 420  
gttgacccgc ttttggtttt ttacgacggg gtgttcggac cgggtgtcgg ctcgtttttt 480  
ctgattgcct ttattgtttt gctcggctgc aagctgttga acgcgatgtc ttacaccaa 540  
ttggcgaacg ttgcttgcaa tcttggttcg ctatcggtat tcctgctgca cggttcgatt 600  
attttcccga ttgtggcaac gatggcggtc ggtgcgtttg tcggtgcgaa tttaggtgcg 660  
agatttgccg tccgcttcgg ttcgaagctg attaagccgc tgcgtgattgt catcagcatt 720  
tcgatggctg tgaaattgtt gatagacgag agaaatccgc tgtatcagat gattgtttcg 780  
atgttttaa 789

<210> 440  
<211> 262  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 440  
Met Glu Asp Leu Tyr Ile Ile Leu Ala Leu Gly Leu Val Ala Met Ile  
1 5 10 15

Ala Gly Phe Ile Asp Ala Ile Ala Gly Gly Gly Gly Leu Ile Thr Leu  
20 25 30

Pro Ala Leu Leu Leu Ala Gly Ile Pro Pro Val Ser Ala Ile Ala Thr  
35 40 45

Asn Lys Leu Gln Ala Ala Ala Thr Phe Ser Ala Thr Val Ser Phe  
50 55 60

Ala Arg Lys Gly Leu Ile Asp Trp Lys Lys Gly Leu Pro Ile Ala Ala  
65 70 75 80

Ala Ser Phe Ala Gly Gly Val Val Gly Ala Leu Ser Val Ser Leu Val  
85 90 95

Ser Lys Asp Ile Leu Leu Ala Val Val Pro Val Leu Leu Ile Phe Val  
 100 105 110  
 Ala Leu Tyr Phe Val Phe Ser Pro Lys Leu Asp Gly Ser Lys Glu Gly  
 115 120 125  
 Lys Ala Arg Met Ser Phe Phe Leu Phe Gly Leu Thr Val Ala Pro Leu  
 130 135 140  
 Leu Gly Phe Tyr Asp Gly Val Phe Gly Pro Gly Val Gly Ser Phe Phe  
 145 150 155 160  
 Leu Ile Ala Phe Ile Val Leu Leu Gly Cys Lys Leu Leu Asn Ala Met  
 165 170 175  
 Ser Tyr Thr Lys Leu Ala Asn Val Ala Cys Asn Leu Gly Ser Leu Ser  
 180 185 190  
 Val Phe Leu Leu His Gly Ser Ile Ile Phe Pro Ile Val Ala Thr Met  
 195 200 205  
 Ala Val Gly Ala Phe Val Gly Ala Asn Leu Gly Ala Arg Phe Ala Val  
 210 215 220  
 Arg Phe Gly Ser Lys Leu Ile Lys Pro Leu Leu Ile Val Ile Ser Ile  
 225 230 235 240  
 Ser Met Ala Val Lys Leu Leu Ile Asp Glu Arg Asn Pro Leu Tyr Gln  
 245 250 255  
 Met Ile Val Ser Met Phe  
 260

<210> 441  
 <211> 635  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 441  
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 attatttggt caaattcgga tcgttttggg cgagattttt ggttttctgg gactgtatga 120  
 cgtctatgct tcggcatggg ttgtcgttat catgatgttt ttgggtgggtt ctaccagttt 180  
 gtgcctgatt cgcaatgtgc cgccgttctg gcgcgaaatg aagtcttttc gggaaaagggt 240  
 taaagaaaaa tctctggcgg cgatgcgcca ttcttcgctg ttggatgtaa aaattgcgcc 300  
 cgaggttgcc aaacgttatc tggaagtaca aggttttcag gggaaaacca ttaaccgtga 360  
 agacgggtcg gttctgattg ccgccaaaaa aggcacaatg aacaaatggg gctatatctt 420  
 tgcccatggt gctttgattg tcatttgcct gggcgggttg atagacagta acctgctggt 480  
 gaaactgggt atgctgaccg gtcggattgt tccggacaat caggcgggtt atgccaagga 540  
 tttcaagccc gaaagtattt tgggtgcgtc caatctctca tttaggggca acgtcaatat 600  
 ttccgagggg cagagtgcgg atgtggtttt cctga 635

<210> 442  
 <211> 210  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
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 <222> (31)..(31)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (181)..(181)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (186)..(186)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (201)..(201)  
 <223> Xaa= any amino acid

<400> 442  
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 1 5 10 15  
 Pro Gln Thr Asp Tyr Leu Val Lys Phe Gly Ser Phe Trp Ala Xaa Ile  
 20 25 30  
 Phe Gly Phe Leu Gly Leu Tyr Asp Val Tyr Ala Ser Ala Trp Phe Val  
 35 40 45  
 Val Ile Met Met Phe Leu Val Val Ser Thr Ser Leu Cys Leu Ile Arg  
 50 55 60  
 Asn Val Pro Pro Phe Trp Arg Glu Met Lys Ser Phe Arg Glu Lys Val  
 65 70 75 80  
 Lys Glu Lys Ser Leu Ala Ala Met Arg His Ser Ser Leu Leu Asp Val  
 85 90 95  
 Lys Ile Ala Pro Glu Val Ala Lys Arg Tyr Leu Glu Val Gln Gly Phe  
 100 105 110  
 Gln Gly Lys Thr Ile Asn Arg Glu Asp Gly Ser Val Leu Ile Ala Ala  
 115 120 125  
 Lys Lys Gly Thr Met Asn Lys Trp Gly Tyr Ile Phe Ala His Val Ala  
 130 135 140  
 Leu Ile Val Ile Cys Leu Gly Gly Leu Ile Asp Ser Asn Leu Leu Leu  
 145 150 155 160  
 Lys Leu Gly Met Leu Thr Gly Arg Ile Phe Arg Thr Ile Arg Arg Phe  
 165 170 175  
 Met Pro Arg Ile Xaa Lys Pro Glu Ser Xaa Phe Gly Cys Val Gln Ser  
 180 185 190

Leu Ile Gly Gln Arg Gln Tyr Phe Xaa Arg Gly Arg Val Arg Met Trp  
 195 200 205

Phe Ser  
 210

<210> 443  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 443  
 nnnnnnnn

8

<210> 444  
 <211> 241  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (170)..(170)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (186)..(186)  
 <223> Xaa= any amino acid

<400> 444  
 Met Ser Lys Ser Arg Ile Ser Pro Thr Leu Leu Ser Arg Pro Trp Phe  
 1 5 10 15

Ala Phe Phe Ser Ser Met Arg Phe Ala Val Ala Leu Leu Ser Leu Leu  
 20 25 30

Gly Ile Ala Ser Val Ile Gly Thr Val Leu Gln Gln Asn Gln Pro Gln  
 35 40 45

Thr Asp Tyr Leu Val Lys Phe Gly Pro Phe Trp Thr Arg Ile Phe Asp  
 50 55 60

Phe Leu Gly Leu Tyr Asp Val Tyr Ala Ser Ala Trp Phe Val Val Ile  
 65 70 75 80

Met Met Phe Leu Val Val Ser Thr Ser Leu Cys Leu Ile Arg Asn Val  
 85 90 95

Pro Pro Phe Trp Arg Glu Met Lys Ser Phe Arg Glu Lys Val Lys Glu  
 100 105 110

Lys Ser Leu Ala Ala Met Arg His Ser Ser Leu Leu Asp Val Lys Ile  
 115 120 125

Ala Pro Glu Val Ala Lys Arg Tyr Leu Glu Val Arg Gly Phe Gln Gly  
 130 135 140

Lys Thr Val Ser Arg Glu Asp Gly Ser Val Leu Ile Ala Ala Lys Lys  
 145 150 155 160

Gly Thr Met Asn Lys Trp Gly Tyr Ile Xaa Ala His Val Ala Leu Ile  
 165 170 175

Val Ile Cys Leu Gly Arg Leu Ile Asn Xaa Asn Leu Leu Leu Lys Leu  
 180 185 190

Gly Met Leu Ala Gly Ser Ile Phe Arg Asn Asn Arg Arg Val Met Pro  
 195 200 205

Arg Ile Ser Lys Pro Glu Ser Ile Trp Gly Gly Val Gln Ser Leu Ile  
 210 215 220

Lys Gly Gln Arg Gln Tyr Phe Gln Arg Gly Lys Val Arg Met Trp Phe  
 225 230 235 240

Ser

<210> 445  
 <211> 1056  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 445  
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 atcttcctga acgcctgttc ggaacaaacc gcgcaaaccg ttaccctgca aggcgaaacg 120  
 atgggcacga cctataccgt caaatatcct tcaaataatc gggacaaact cccctcacct 180  
 gccgaaatc aaaaacgcat cgatgacgcg cttaaagaag tcaaccggca gatgtccacc 240  
 tatcagcccg actccgaaat cagccggttc aaccaacaca cagccggcaa gccctccgc 300  
 atttcaagcg acttcgcaca cgttactgcc gaagccgtcc gcctgaaccg cctgacacac 360  
 ggcgcgctgg acgtaaccgt cggcccttg gtcaaccttt ggggattcgg ccccgacaaa 420  
 tccgttacc gtgaaccgtc gccggaacaa atcaaacagg cggcatctta tacgggcata 480  
 gacaaaatca ttttgaaaca aggcaaagat tacgcttcct tgagcaaaac ccacccaag 540  
 gcctatttgg atttatcttc gattgccaaa ggcttcggcg ttgataaagt tgcgggcgaa 600  
 ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcggcgagtt gcacggcaaa 660  
 ggcaaaaacg cgcgcggcga accgtggcgc atcggtatcg agcagcccaa tatcgtccaa 720  
 ggcggaata cgagattat cgtcccgtg aacaaccgtt cgcttgccac ttccggcgat 780  
 taccgtattt tccacgtcga taaaaacggc aaacgcctct cccatatacat caaccggaac 840  
 aacaaacgac ccatcagcca caacctcgcc tccatcagcg tggtcgcaga cagtgcgatg 900  
 acggcggacg gcttgctccac aggattatc gtattgggcg aaaccgaagc cttaaagctg 960  
 gcagagcgcg aaaaactcgc tgttttcctg attgtcaggg ataaaggcgg ctaccgcacc 1020  
 gccatgtctt ccgaatttga aaaactgctc cgctaa 1056

<210> 446  
 <211> 351  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 446

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Ala	Leu	Gly	Phe	Ile	Phe	Leu	Asn	Ala	Cys	Ser	Glu	Gln	Thr	Ala	Gln
			20					25					30		
Thr	Val	Thr	Leu	Gln	Gly	Glu	Thr	Met	Gly	Thr	Thr	Tyr	Thr	Val	Lys
			35				40					45			
Tyr	Leu	Ser	Asn	Asn	Arg	Asp	Lys	Leu	Pro	Ser	Pro	Ala	Glu	Ile	Gln
	50					55					60				
Lys	Arg	Ile	Asp	Asp	Ala	Leu	Lys	Glu	Val	Asn	Arg	Gln	Met	Ser	Thr
65					70					75					80
Tyr	Gln	Pro	Asp	Ser	Glu	Ile	Ser	Arg	Phe	Asn	Gln	His	Thr	Ala	Gly
				85					90					95	
Lys	Pro	Leu	Arg	Ile	Ser	Ser	Asp	Phe	Ala	His	Val	Thr	Ala	Glu	Ala
			100					105						110	
Val	Arg	Leu	Asn	Arg	Leu	Thr	His	Gly	Ala	Leu	Asp	Val	Thr	Val	Gly
		115					120					125			
Pro	Leu	Val	Asn	Leu	Trp	Gly	Phe	Gly	Pro	Asp	Lys	Ser	Val	Thr	Arg
	130					135					140				
Glu	Pro	Ser	Pro	Glu	Gln	Ile	Lys	Gln	Ala	Ala	Ser	Tyr	Thr	Gly	Ile
145					150					155					160
Asp	Lys	Ile	Ile	Leu	Lys	Gln	Gly	Lys	Asp	Tyr	Ala	Ser	Leu	Ser	Lys
				165					170					175	
Thr	His	Pro	Lys	Ala	Tyr	Leu	Asp	Leu	Ser	Ser	Ile	Ala	Lys	Gly	Phe
			180					185						190	
Gly	Val	Asp	Lys	Val	Ala	Gly	Glu	Leu	Glu	Lys	Tyr	Gly	Ile	Gln	Asn
		195					200					205			
Tyr	Leu	Val	Glu	Ile	Gly	Gly	Glu	Leu	His	Gly	Lys	Gly	Lys	Asn	Ala
	210					215					220				
Arg	Gly	Glu	Pro	Trp	Arg	Ile	Gly	Ile	Glu	Gln	Pro	Asn	Ile	Val	Gln
225					230					235					240
Gly	Gly	Asn	Thr	Gln	Ile	Ile	Val	Pro	Leu	Asn	Asn	Arg	Ser	Leu	Ala
				245					250					255	
Thr	Ser	Gly	Asp	Tyr	Arg	Ile	Phe	His	Val	Asp	Lys	Asn	Gly	Lys	Arg
			260					265					270		
Leu	Ser	His	Ile	Ile	Asn	Pro	Asn	Asn	Lys	Arg	Pro	Ile	Ser	His	Asn
		275					280					285			
Leu	Ala	Ser	Ile	Ser	Val	Val	Ala	Asp	Ser	Ala	Met	Thr	Ala	Asp	Gly

290

295

300

Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Lys Leu  
305 310 315 320

Ala Glu Arg Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Gly  
325 330 335

Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Glu Lys Leu Leu Arg  
340 345 350

<210> 447  
<211> 1056  
<212> DNA  
<213> Neisseria meningitidis

<220>  
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<222> (166)..(166)  
<223> N= Unknown

<220>  
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<222> (174)..(174)  
<223> N= Unknown

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<223> N= Unknown

<220>  
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<222> (586)..(586)  
<223> N= Unknown

<220>  
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<222> (588)..(588)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (645)..(645)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (662)..(662)  
<223> N= Unknown

<220>  
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<222> (763)..(763)  
<223> N= Unknown



<220>  
<221> misc\_feature  
<222> (883)..(883)  
<223> N= Unknown

<220>  
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<222> (915)..(915)  
<223> N= Unknown

<400> 447  
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atcttcctga acgcctgttc ggaacaaacc gcgcaaaccg ttaccctgca aggtgaaacg 120  
atgggcacga cctataccgt caaatacctt tcaaataatc gggacnaact ccntcacct 180  
gccgaaatac aaaancgcat cgatgacgcg cttaaagaag tcaaccggca gatgtccacc 240  
tatcagcccg actccgaaat cagccgggtc aaccaacaca cagccggcaa gcccctccgc 300  
atttcaagcg acttcgcaca cgttactgcc gaagccgtcc acctgaaccg cctgacacac 360  
ggcgcgctgg acgtaaccgt cggccccttg gtcaaccttt ggggattcgg ccccgacaaa 420  
tccgttacct gtgaaccgtc gccggaacaa atcaaacaag cagcatctta tacgggcata 480  
gacaaaatca ttttgaaaca aggcaaagat tacgcttcct tgagcaaaac ccacccaag 540  
gcctatttgg atttatcttc gattgccaaa ggcttcggcg ttgatnangt tgcgggcgaa 600  
ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcgngagtt gcacggcaaa 660  
gncaaaaacg cgcgcggcga accttggcgc atcggcatcg aacagcccaa catcgtccaa 720  
ggcggcaata cgcagattat cgtcccgtcg aacaaccgtt cgnttgccac ttccggcgat 780  
taccgtatth tccacgtcga taaaagcggc aaacgcctct cccatatcat taatccgaac 840  
aacaacgac ccatcagcca caacctcgcc tccatcagcg tgntcgcaga cagtgcgatg 900  
acggcgagcg gcttntccac aggattattc gtattgggcg aaaccgaagc cttaaagctg 960  
gcagagcgcg aaaaactcgc tgttttcctg attgtcaggg ataaaggcgg ctaccgcacc 1020  
gccatgtctt ccgaatttga aaaactgctc cgctaa 1056

<210> 448  
<211> 351  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (56)..(56)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (65)..(65)  
<223> Xaa= any amino acid

<220>  
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<222> (196)..(196)  
<223> Xaa= any amino acid

<220>  
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<222> (221)..(221)  
<223> Xaa= any amino acid

<220>

<221> misc\_feature  
<222> (255)..(255)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (295)..(295)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (305)..(305)  
<223> Xaa= any amino acid

<400> 448

Met	Pro	Ser	Glu	Thr	Arg	Leu	Pro	Asn	Phe	Ile	Arg	Thr	Leu	Ile	Phe
1				5					10					15	
Ala	Leu	Ser	Phe	Ile	Phe	Leu	Asn	Ala	Cys	Ser	Glu	Gln	Thr	Ala	Gln
			20					25					30		
Thr	Val	Thr	Leu	Gln	Gly	Glu	Thr	Met	Gly	Thr	Thr	Tyr	Thr	Val	Lys
		35					40					45			
Tyr	Leu	Ser	Asn	Asn	Arg	Asp	Xaa	Leu	Pro	Ser	Pro	Ala	Glu	Ile	Gln
	50					55					60				
Xaa	Arg	Ile	Asp	Asp	Ala	Leu	Lys	Glu	Val	Asn	Arg	Gln	Met	Ser	Thr
65					70					75					80
Tyr	Gln	Pro	Asp	Ser	Glu	Ile	Ser	Arg	Phe	Asn	Gln	His	Thr	Ala	Gly
			85						90					95	
Lys	Pro	Leu	Arg	Ile	Ser	Ser	Asp	Phe	Ala	His	Val	Thr	Ala	Glu	Ala
			100					105					110		
Val	His	Leu	Asn	Arg	Leu	Thr	His	Gly	Ala	Leu	Asp	Val	Thr	Val	Gly
		115					120					125			
Pro	Leu	Val	Asn	Leu	Trp	Gly	Phe	Gly	Pro	Asp	Lys	Ser	Val	Thr	Arg
	130					135					140				
Glu	Pro	Ser	Pro	Glu	Gln	Ile	Lys	Gln	Ala	Ala	Ser	Tyr	Thr	Gly	Ile
145					150					155					160
Asp	Lys	Ile	Ile	Leu	Lys	Gln	Gly	Lys	Asp	Tyr	Ala	Ser	Leu	Ser	Lys
				165					170					175	
Thr	His	Pro	Lys	Ala	Tyr	Leu	Asp	Leu	Ser	Ser	Ile	Ala	Lys	Gly	Phe
			180					185					190		
Gly	Val	Asp	Xaa	Val	Ala	Gly	Glu	Leu	Glu	Lys	Tyr	Gly	Ile	Gln	Asn
		195					200						205		
Tyr	Leu	Val	Glu	Ile	Gly	Gly	Glu	Leu	His	Gly	Lys	Xaa	Lys	Asn	Ala
	210					215					220				

Arg Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Val Gln  
225 230 235 240

Gly Gly Asn Thr Gln Ile Ile Val Pro Leu Asn Asn Arg Ser Xaa Ala  
245 250 255

Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Ser Gly Lys Arg  
260 265 270

Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn  
275 280 285

Leu Ala Ser Ile Ser Val Xaa Ala Asp Ser Ala Met Thr Ala Asp Gly  
290 295 300

Xaa Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Lys Leu  
305 310 315 320

Ala Glu Arg Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Gly  
325 330 335

Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Glu Lys Leu Leu Arg  
340 345 350

<210> 449  
<211> 1056  
<212> DNA  
<213> *Neisseria gonorrhoeae*

<400> 449  
atgccgtctg aaacacgcct gccgaacctt atccgcgcct tgatatttgc cctgggtttc 60  
atcttcctga acgcctgttc ggaacaaacc gcgcaaaccg ttaccctgca aggcgaaacg 120  
atgggtacga cctataccgt caaatatcctt tcaaataatc gggacaaact cccctcccct 180  
gccaaaatac aaaagcgcct tgatgatgcg cttaaagaag tcaaccggca gatgtccacc 240  
taccagaccg attccgaaat cagccgggtc aaccaacaca cagccggcaa gcccctccgc 300  
atttcaagcg atttcgcaca cgttaccgcc gaagccgtcc gcctgaaccg cctgactcac 360  
ggcgactgg acgtaaccgt cggccctttg gtcaaccttt ggggggttcg ccccgacaaa 420  
tccgttacc gtgaaccgtc gccggaacaa atcaaacagg cggcatctta tacgggcata 480  
gacaaaatca ttttgcaaca aggcaaagat tacgcttcct tgagcaaaac ccaccccaaa 540  
gcctatttgg atttatcttc gattgcaaaa ggcttcggcg ttgataaagt tgcgggcgaa 600  
ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcggcgagtt gcacggcaaa 660  
ggcaaaaatg cgcacggcga accgtggcgc atcgggtatag agcaacccaa tatcatccaa 720  
ggcggcaata cgcagattat cgtcccgtcg aacaaccgtt cgcttgccac ttccggcgat 780  
taccgtattt tccacgtcga taaaaacggc aaacgccttt cccacatcat caatcccaac 840  
aacaaacgac ccatcagcca caacctcgcc tccatcagcg tgggtctcaga cagtgcgatg 900  
acggcggacg gtttatccac aggattattt gttttaggcg aaaccgaagc cttaaggctg 960  
gcagaacaag aaaaactcgc tgttttccta attgtccggg ataaggacgg ctaccgcacc 1020  
gccatgtctt ccgaatttgc caagctgctc cgctaa 1056

<210> 450  
<211> 351  
<212> PRT  
<213> *Neisseria gonorrhoeae*

<400> 450  
Met Pro Ser Glu Thr Arg Leu Pro Asn Leu Ile Arg Ala Leu Ile Phe

1	5	10	15
Ala Leu Gly Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln	20	25	30
Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Thr Val Lys	35	40	45
Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Lys Ile Gln	50	55	60
Lys Arg Ile Asp Asp Ala Leu Lys Glu Val Asn Arg Gln Met Ser Thr	65	70	75
Tyr Gln Thr Asp Ser Glu Ile Ser Arg Phe Asn Gln His Thr Ala Gly	85	90	95
Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala	100	105	110
Val Arg Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly	115	120	125
Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg	130	135	140
Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile	145	150	155
Asp Lys Ile Ile Leu Gln Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys	165	170	175
Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe	180	185	190
Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn	195	200	205
Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala	210	215	220
His Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Ile Gln	225	230	235
Gly Gly Asn Thr Gln Ile Ile Val Pro Leu Asn Asn Arg Ser Leu Ala	245	250	255
Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Asn Gly Lys Arg	260	265	270
Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn	275	280	285
Leu Ala Ser Ile Ser Val Val Ser Asp Ser Ala Met Thr Ala Asp Gly	290	295	300

Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Arg Leu  
305 310 315 320

Ala Glu Gln Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Asp  
325 330 335

Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Ala Lys Leu Leu Arg  
340 345 350

<210> 451  
<211> 789  
<212> DNA  
<213> Neisseria meningitidis

<400> 451  
ccgtgccgcc gacagggcga cgacgtgtat gggcgccacg cgtcccgctca aaaattgtgg 60  
ctgcgcttca tcggcgggccg gtcgcatcaa aatatacggg gcggcgccgc tgcggacggg 120  
tggcgcaaag gcgtgcaaat cggcgggcgag gtgtttgtac ggcaaaatga aggcagccka 180  
ytggcaatcg gcgtgatggg cggcagggcc ggccagcacg cwtcagtcaa cggcaaaggc 240  
ggtgcggcag gcagtgatgt gtatggttat ggcggggggtg tttatgctgc gtggcatcag 300  
ttgcgcgata aacaaacggg tgcgtatttg gacggctggg tgcaatacca acgtttcaaa 360  
caccgcatca atgatgaaaa ccgtgcggaa cgctacaaaa ccaaagggtg gacggcttct 420  
gtcgaaggcg gctacaacgc gcttgtggcg gaaggcattg tcggaaaagg caataatgtg 480  
cggttttacc tacaaccgca ggcgaggttt acctacttgg gcgtaaacgg cggttttacc 540  
gacagcgagg ggacggcggt cggactgctc ggcagcggtc agtggcaaag ccgcgcggcg 600  
attcgggcaa aaaccggtt tgctttgcgt aacgggtgtc atcttcagcc ttttgccgct 660  
tttaaatgtt tgacacaggtc aaaatctttc ggcgtggaaa tggacggcga aaaacagacg 720  
ctggcaggca ggacggcact cgaagggcgg ttcggtattg aagccggttg gaaaggccat 780  
atgtccgca 789

<210> 452  
<211> 263  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (60)..(60)  
<223> Xaa= any amino acid

<400> 452  
Pro Cys Arg Arg Gln Gly Asp Asp Val Tyr Ala Ala His Ala Ser Arg  
1 5 10 15

Gln Lys Leu Trp Leu Arg Phe Ile Gly Gly Arg Ser His Gln Asn Ile  
20 25 30

Arg Gly Gly Ala Ala Ala Asp Gly Trp Arg Lys Gly Val Gln Ile Gly  
35 40 45

Gly Glu Val Phe Val Arg Gln Ash Glu Gly Ser Xaa Leu Ala Ile Gly  
50 55 60

Val Met Gly Gly Arg Ala Gly Gln His Ala Ser Val Asn Gly Lys Gly  
65 70 75 80

Gly Ala Ala Gly Ser Asp Leu Tyr Gly Tyr Gly Gly Gly Val Tyr Ala  
                     85                    90                    95  
 Ala Trp His Gln Leu Arg Asp Lys Gln Thr Gly Ala Tyr Leu Asp Gly  
                     100                    105                    110  
 Trp Leu Gln Tyr Gln Arg Phe Lys His Arg Ile Asn Asp Glu Asn Arg  
                     115                    120                    125  
 Ala Glu Arg Tyr Lys Thr Lys Gly Trp Thr Ala Ser Val Glu Gly Gly  
                     130                    135                    140  
 Tyr Asn Ala Leu Val Ala Glu Gly Ile Val Gly Lys Gly Asn Asn Val  
                     145                    150                    155                    160  
 Arg Phe Tyr Leu Gln Pro Gln Ala Gln Phe Thr Tyr Leu Gly Val Asn  
                     165                    170                    175  
 Gly Gly Phe Thr Asp Ser Glu Gly Thr Ala Val Gly Leu Leu Gly Ser  
                     180                    185                    190  
 Gly Gln Trp Gln Ser Arg Ala Gly Ile Arg Ala Lys Thr Arg Phe Ala  
                     195                    200                    205  
 Leu Arg Asn Gly Val Asn Leu Gln Pro Phe Ala Ala Phe Asn Val Leu  
                     210                    215                    220  
 His Arg Ser Lys Ser Phe Gly Val Glu Met Asp Gly Glu Lys Gln Thr  
                     225                    230                    235                    240  
 Leu Ala Gly Arg Thr Ala Leu Glu Gly Arg Phe Gly Ile Glu Ala Gly  
                     245                    250                    255  
 Trp Lys Gly His Met Ser Ala  
                     260

<210> 453  
 <211> 1860  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 453  
 atgttcagag ctcagcttgg ttcaaatact cgttctacca aaatcggcga cgatgccgat 60  
 ttttcatttt cagacaagcc gaaaccggc acttcccatt atttttccag cggtaaaacc 120  
 gatcaaaaatt catccgaata tgggtatgac gaaatcaata tccaaggtaa aaactacaat 180  
 agcggcatac tcgccgtcga taatatgcc gttgttaaga aatatattac agatacttac 240  
 ggggataatt taaaggatgc ggttaagaag caattacagg atttatacaa aacaagaccc 300  
 gaagcttggg aagaaaataa aaaacggact gaggaggcgt atatagaaca gcttggacca 360  
 aaatttagta tactcaaaca gaaaaacccc gatttaatta ataaattggg agaagattcc 420  
 gtactcactc ctcatagtaa tacatcacag actagtctca acaacatctt caataaaaaa 480  
 ttacacgtca aaatcgaaaa caaatccac gtcgccggac aggtgttgga actgaccaag 540  
 atgacgctga aagattccct ttgggaaccg cgccgccatt ccgacatcca tatgctggaa 600  
 acttccgata atgcccgcat ccgcctgaac acgaaagatg aaaaactgac cgtccataaa 660  
 gcgtatcagg gcggtgcgga tttcctgttc ggctacgacg tcggggagtc ggacaaaccc 720  
 gccctgacct ttgaagaaaa agtcagcgga caatccggcg tggttttgga acgccggccg 780  
 gaaaatctga aaacgctcga cgggcgcaaa ctgattgcgg cggaaaaggc agactcta 840

tcgtttgcgt	ttaaaca	ttaccggcag	ggactgtacg	aattattgct	caagcaatgc	900
gaaggcggat	tttgcttggg	cgtgcagcgt	ttggctatcc	ccgaggcgga	agcggtttta	960
tatgcccac	aggcttatgc	ggcaaatact	ttgttcgggc	tgcgtgccgc	cgacaggggc	1020
gacgacgtgt	atgccgccga	tccgtcccgt	caaaaattgt	ggctgcgctt	catcggcggc	1080
cggtcgcac	aaaatatacg	gggcggcgcg	gctgcggacg	ggcggcgcaa	aggcgtgcaa	1140
atcggcggcg	aggtgtttgt	acggcaaaat	gaaggcagcc	ggctggcaat	cggcgtgatg	1200
ggcggcaggg	ctggccagca	cgcatacagtc	aacggcaaaag	gcggtgcggc	aggcagttat	1260
ttgcatgggt	atggcggggg	tgtttatgct	gcgtggcatc	agttgcgcga	taaacaacg	1320
ggtgcgtatt	tggacggctg	gttgcaatac	caacgtttca	aacaccgcat	caatgatgaa	1380
aaccgtgcgg	aacgctacaa	aaccaaaggt	tggacggctt	ctgtcgaagg	cggctacaac	1440
gcgcttgtgg	cgggaaggcgt	tgtcggaaaa	ggcaataatg	tgcggtttta	cctgcaaccg	1500
caggcgagcgt	ttacctactt	gggcgtaaac	ggcggcttta	ccgacagcga	ggggacggcg	1560
gtcggactgc	tccgcagcgg	tcagtggcaa	agccgcggccg	gcattcgggc	aaaaaccgt	1620
tttgctttgc	gtaacgggtgt	caatcttcag	ccttttgccg	cttttaaatgt	tttgacacagg	1680
tcaaaatctt	tcggcggtgga	aatggacggc	gaaaaacaga	cgcgtggcagg	caggacggcg	1740
ctcgaagggc	ggttcggcat	tgaagccggt	tggaaaggcc	atatgtccgc	acgcatacgga	1800
tacggcaaaa	ggacggacgg	cgacaaagaa	gccgcattgt	cgctcaaata	gctgttttga	1860

<210> 454  
 <211> 619  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 454  
 Met Phe Arg Ala Gln Leu Gly Ser Asn Thr Arg Ser Thr Lys Ile Gly  
 1 5 10 15  
 Asp Asp Ala Asp Phe Ser Phe Ser Asp Lys Pro Lys Pro Gly Thr Ser  
 20 25 30  
 His Tyr Phe Ser Ser Gly Lys Thr Asp Gln Asn Ser Ser Glu Tyr Gly  
 35 40 45  
 Tyr Asp Glu Ile Asn Ile Gln Gly Lys Asn Tyr Asn Ser Gly Ile Leu  
 50 55 60  
 Ala Val Asp Asn Met Pro Val Val Lys Lys Tyr Ile Thr Asp Thr Tyr  
 65 70 75 80  
 Gly Asp Asn Leu Lys Asp Ala Val Lys Lys Gln Leu Gln Asp Leu Tyr  
 85 90 95  
 Lys Thr Arg Pro Glu Ala Trp Glu Glu Asn Lys Lys Arg Thr Glu Glu  
 100 105 110  
 Ala Tyr Ile Glu Gln Leu Gly Pro Lys Phe Ser Ile Leu Lys Gln Lys  
 115 120 125  
 Asn Pro Asp Leu Ile Asn Lys Leu Val Glu Asp Ser Val Leu Thr Pro  
 130 135 140  
 His Ser Asn Thr Ser Gln Thr Ser Leu Asn Asn Ile Phe Asn Lys Lys  
 145 150 155 160  
 Leu His Val Lys Ile Glu Asn Lys Ser His Val Ala Gly Gln Val Leu  
 165 170 175

Glu	Leu	Thr	Lys	Met	Thr	Leu	Lys	Asp	Ser	Leu	Trp	Glu	Pro	Arg	Arg	180	185	190	
His	Ser	Asp	Ile	His	Met	Leu	Glu	Thr	Ser	Asp	Asn	Ala	Arg	Ile	Arg	195	200	205	
Leu	Asn	Thr	Lys	Asp	Glu	Lys	Leu	Thr	Val	His	Lys	Ala	Tyr	Gln	Gly	210	215	220	
Gly	Ala	Asp	Phe	Leu	Phe	Gly	Tyr	Asp	Val	Arg	Glu	Ser	Asp	Lys	Pro	225	230	235	240
Ala	Leu	Thr	Phe	Glu	Glu	Lys	Val	Ser	Gly	Gln	Ser	Gly	Val	Val	Leu	245	250	255	
Glu	Arg	Arg	Pro	Glu	Asn	Leu	Lys	Thr	Leu	Asp	Gly	Arg	Lys	Leu	Ile	260	265	270	
Ala	Ala	Glu	Lys	Ala	Asp	Ser	Asn	Ser	Phe	Ala	Phe	Lys	Gln	Asn	Tyr	275	280	285	
Arg	Gln	Gly	Leu	Tyr	Glu	Leu	Leu	Leu	Lys	Gln	Cys	Glu	Gly	Gly	Phe	290	295	300	
Cys	Leu	Gly	Val	Gln	Arg	Leu	Ala	Ile	Pro	Glu	Ala	Glu	Ala	Val	Leu	305	310	315	320
Tyr	Ala	Gln	Gln	Ala	Tyr	Ala	Ala	Asn	Thr	Leu	Phe	Gly	Leu	Arg	Ala	325	330	335	
Ala	Asp	Arg	Gly	Asp	Asp	Val	Tyr	Ala	Ala	Asp	Pro	Ser	Arg	Gln	Lys	340	345	350	
Leu	Trp	Leu	Arg	Phe	Ile	Gly	Gly	Arg	Ser	His	Gln	Asn	Ile	Arg	Gly	355	360	365	
Gly	Ala	Ala	Ala	Asp	Gly	Arg	Arg	Lys	Gly	Val	Gln	Ile	Gly	Gly	Glu	370	375	380	
Val	Phe	Val	Arg	Gln	Asn	Glu	Gly	Ser	Arg	Leu	Ala	Ile	Gly	Val	Met	385	390	395	400
Gly	Gly	Arg	Ala	Gly	Gln	His	Ala	Ser	Val	Asn	Gly	Lys	Gly	Gly	Ala	405	410	415	
Ala	Gly	Ser	Tyr	Leu	His	Gly	Tyr	Gly	Gly	Gly	Val	Tyr	Ala	Ala	Trp	420	425	430	
His	Gln	Leu	Arg	Asp	Lys	Gln	Thr	Gly	Ala	Tyr	Leu	Asp	Gly	Trp	Leu	435	440	445	
Gln	Tyr	Gln	Arg	Phe	Lys	His	Arg	Ile	Asn	Asp	Glu	Asn	Arg	Ala	Glu	450	455	460	
Arg	Tyr	Lys	Thr	Lys	Gly	Trp	Thr	Ala	Ser	Val	Glu	Gly	Gly	Tyr	Asn	465	470	475	480



Ala Leu Val Ala Glu Gly Val Val Gly Lys Gly Asn Asn Val Arg Phe  
485 490 495

Tyr Leu Gln Pro Gln Ala Gln Phe Thr Tyr Leu Gly Val Asn Gly Gly  
500 505 510

Phe Thr Asp Ser Glu Gly Thr Ala Val Gly Leu Leu Gly Ser Gly Gln  
515 520 525

Trp Gln Ser Arg Ala Gly Ile Arg Ala Lys Thr Arg Phe Ala Leu Arg  
530 535 540

Asn Gly Val Asn Leu Gln Pro Phe Ala Ala Phe Asn Val Leu His Arg  
545 550 555 560

Ser Lys Ser Phe Gly Val Glu Met Asp Gly Glu Lys Gln Thr Leu Ala  
565 570 575

Gly Arg Thr Ala Leu Glu Gly Arg Phe Gly Ile Glu Ala Gly Trp Lys  
580 585 590

Gly His Met Ser Ala Arg Ile Gly Tyr Gly Lys Arg Thr Asp Gly Asp  
595 600 605

Lys Glu Ala Ala Leu Ser Leu Lys Trp Leu Phe  
610 615

<210> 455  
<211> 8  
<212> DNA  
<213> Neisseria gonorrhoeae

<220>  
<221> misc\_feature  
<222> (1)..(8)  
<223> N= Unknown

<400> 455  
nnnnnnnnn

8

<210> 456  
<211> 627  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 456  
Lys Lys Leu Arg Asp Arg Asn Ser Glu Tyr Trp Lys Glu Glu Thr Tyr  
1 5 10 15

His Ile Lys Ser Asn Gly Arg Thr Tyr Pro Asn Ile Pro Ala Leu Phe  
20 25 30

Pro Lys His Pro Phe Asp Pro Phe Glu Asn Ile Asn Asn Ser Lys Lys  
35 40 45

Ile Ser Phe Tyr Asp Lys Glu Tyr Thr Glu Asp Tyr Leu Val Gly Phe

50	55	60
Ala Arg Gly Phe Gly Val Glu Lys Arg Asn Gly Glu Glu Glu Lys Pro 65 70 75 80		
Leu Arg Gln Tyr Phe Lys Asp Cys Val Asn Thr Glu Asn Ser Asn Asn 85 90 95		
Asp Asn Cys Lys Ile Ser Ser Phe Gly Asn Tyr Gly Pro Ile Leu Ile 100 105 110		
Lys Ser Asp Ile Phe Ala Leu Ala Ser Gln Ile Lys Asn Ser His Ile 115 120 125		
Asn Ser Glu Ile Leu Ser Val Gly Asn Tyr Ile Glu Trp Leu Arg Pro 130 135 140		
Thr Leu Asn Lys Leu Thr Gly Trp Gln Glu His Leu Tyr Ala Gly Leu 145 150 155 160		
Asp Pro Phe His Tyr Ile Glu Val Thr Asp Asn Ser His Val Ile Gly 165 170 175		
Gln Thr Ile Asp Leu Gly Ala Leu Glu Leu Thr Asn Ser Leu Trp Lys 180 185 190		
Pro Arg Trp Asn Ser Asn Ile Asp Tyr Leu Ile Thr Lys Asn Ala Glu 195 200 205		
Ile Arg Phe Asn Thr Lys Asn Glu Ser Leu Leu Val Lys Glu Asp Tyr 210 215 220		
Ala Gly Gly Ala Arg Phe Arg Phe Ala Tyr Asp Leu Lys Asp Lys Val 225 230 235 240		
Pro Glu Ile Pro Val Leu Thr Phe Glu Lys Asn Ile Thr Gly Thr Ser 245 250 255		
Asp Ile Ile Phe Glu Gly Lys Ala Leu Asp Asn Leu Lys His Leu Asp 260 265 270		
Gly His Gln Ile Val Lys Val Asn Asp Thr Ala Asp Lys Asp Ala Phe 275 280 285		
Arg Leu Ser Ser Lys Tyr Arg Lys Gly Ile Tyr Thr Leu Ser Leu Gln 290 295 300		
Gln Arg Pro Glu Gly Phe Phe Thr Lys Val Gln Glu Arg Asp Asp Ile 305 310 315 320		
Ala Ile Tyr Ala Gln Gln Ala Gln Ala Ala Asn Thr Leu Phe Ala Leu 325 330 335		
Arg Leu Asn Asp Lys Asn Ser Asp Ile Phe Asp Arg Thr Leu Pro Arg 340 345 350		

Lys Gly Leu Trp Leu Arg Val Ile Asp Gly His Ser Asn Gln Trp Val  
355 360 365

Gln Gly Lys Thr Ala Pro Val Glu Gly Tyr Arg Lys Gly Val Gln Leu  
370 375 380

Gly Gly Glu Val Phe Thr Trp Gln Asn Glu Ser Asn Gln Leu Ser Ile  
385 390 395 400

Gly Leu Met Gly Gly Gln Ala Glu Gln Arg Ser Thr Phe Arg Asn Pro  
405 410 415

Asp Thr Asp Asn Leu Thr Thr Gly Asn Val Lys Gly Phe Gly Ala Gly  
420 425 430

Val Tyr Ala Thr Trp His Gln Leu Gln Asp Lys Gln Thr Gly Ala Tyr  
435 440 445

Val Asp Ser Trp Met Gln Tyr Gln Arg Phe Arg His Arg Ile Asn Thr  
450 455 460

Glu Tyr Ala Thr Glu Arg Phe Thr Ser Lys Gly Ile Thr Ala Ser Ile  
465 470 475 480

Glu Ala Gly Tyr Asn Ala Leu Leu Ala Glu His Phe Thr Lys Lys Gly  
485 490 495

Asn Ser Leu Arg Val Tyr Leu Gln Pro Gln Ala Gln Leu Thr Tyr Leu  
500 505 510

Gly Val Asn Gly Lys Phe Ser Asp Ser Glu Asn Ala Gln Val Asn Leu  
515 520 525

Leu Gly Ser Arg Gln Leu Gln Ser Arg Val Gly Val Gln Ala Lys Ala  
530 535 540

Gln Phe Ala Phe Thr Asn Gly Val Thr Phe Gln Pro Phe Val Ala Val  
545 550 555 560

Asn Ser Ile Tyr Gln Gln Lys Pro Phe Gly Val Glu Ile Asp Gly Asp  
565 570 575

Arg Arg Val Ile Asn Asn Lys Thr Val Ile Glu Thr Gln Leu Gly Val  
580 585 590

Ala Ala Lys Ile Lys Ser His Leu Thr Leu Gln Ala Ser Phe Asn Arg  
595 600 605

Gln Thr Ser Lys His His His Ala Lys Gln Gly Ala Leu Asn Leu Gln  
610 615 620

Trp Thr Phe  
625

<210> 457

<211> 380

<212> DNA  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (379)..(379)  
<223> N= Unknown

<400> 457  
gcggaatatg ttcagttctc tatagatttg ttcagtgtgg gtaaatacggg gggcgggtata 60  
cctaaggcta agcctgtgtt tgatgcgaaa ccgagatggg aggttgatag gaagcttaat 120  
aaattgacaa ctcgtgagca ggtggagaaa aatgttcagg aaacgagaag aaggagtcag 180  
agtagtcagt ttaaagccca tgcgcaacga gaatgggaaa ataaaacagg gttagatttt 240  
aatcatttta taggtggtga tatcaataaa aaaggcacag taacaggagg gcatagtcta 300  
acccgtggtg atgtacgggt gatacaacaa acctcggcac ctgataaaca tggggtttat 360  
caagcgacag tggaaattna 380

<210> 458  
<211> 127  
<212> PRT  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (119)..(119)  
<223> Xaa= any amino acid

<220>  
<221> misc\_feature  
<222> (127)..(127)  
<223> Xaa= any amino acid

<400> 458  
Ala Glu Tyr Val Gln Phe Ser Ile Asp Leu Phe Ser Val Gly Lys Ser  
1 5 10 15  
Gly Gly Gly Ile Pro Lys Ala Lys Pro Val Phe Asp Ala Lys Pro Arg  
20 25 30  
Trp Glu Val Asp Arg Lys Leu Asn Lys Leu Thr Thr Arg Glu Gln Val  
35 40 45  
Glu Lys Asn Val Gln Glu Thr Arg Arg Arg Ser Gln Ser Ser Gln Phe  
50 55 60  
Lys Ala His Ala Gln Arg Glu Trp Glu Asn Lys Thr Gly Leu Asp Phe  
65 70 75 80  
Asn His Phe Ile Gly Gly Asp Ile Asn Lys Lys Gly Thr Val Thr Gly  
85 90 95  
Gly His Ser Leu Thr Arg Gly Asp Val Arg Val Ile Gln Gln Thr Ser  
100 105 110  
Ala Pro Asp Lys His Gly Xaa Leu Ser Ser Asp Ser Gly Asn Xaa  
115 120 125

<210> 459  
<211> 683  
<212> DNA  
<213> Neisseria meningitidis

<220>  
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<222> (12)..(12)  
<223> N= Unknown

<220>  
<221> misc\_feature  
<222> (34)..(34)  
<223> N= Unknown

<400> 459  
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caggttctcg accgtcagca tttcgaaccc gacgggaaat accacctatt cggcagcagg 120  
ggggaacttg ccgagcgcca gtctcatatc ggattgggaa aaatacaaag ccacagttg 180  
ggcaacctga tgattcaaca ggcggccatt aaaggaaata tcggctacat tgtccgcttt 240  
tccgatcacg ggcacgaagt ccattccccc ttcgacaacc atgcctcaca ttccgattct 300  
gatgaagccg gtagtcccgt tgacggattt agcctttacc gcatccattg ggacggatac 360  
gaacaccatc ccgccgacgg ctatgacggg ccacagggcg gcggctatcc cgctcccaaa 420  
ggcgcgaggg atatatacag ttacgacata aaaggcggtt cccaaaatat ccgcctcaac 480  
ctgaccgaca accgcagcac cggacaacgg cttgccgacc gttccacaa tgccggtagt 540  
atgctgacgc aaggagtagg cgacggattc aaacgcgcca cccgatacag ccccgagctg 600  
gacagatcgg gcaatgccgc cgaagccttc aacggcactg cagatatcgt taaaaacatc 660  
atcggcgctg caggagaaat tgt 683

<210> 460  
<211> 227  
<212> PRT  
<213> Neisseria meningitidis

<220>  
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<222> (12)..(12)  
<223> Xaa= any amino acid

<400> 460  
Ala Val Cys Leu Pro Met His Ala His Ala Ser Xaa Leu Ala Asn Asp  
1 5 10 15  
Ser Phe Ile Arg Gln Val Leu Asp Arg Gln His Phe Glu Pro Asp Gly  
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Lys Tyr His Leu Phe Gly Ser Arg Gly Glu Leu Ala Glu Arg Gln Ser  
35 40 45  
His Ile Gly Leu Gly Lys Ile Gln Ser His Gln Leu Gly Asn Leu Met  
50 55 60  
Ile Gln Gln Ala Ala Ile Lys Gly Asn Ile Gly Tyr Ile Val Arg Phe  
65 70 75 80  
Ser Asp His Gly His Glu Val His Ser Pro Phe Asp Asn His Ala Ser

85

90

95

His Ser Asp Ser Asp Glu Ala Gly Ser Pro Val Asp Gly Phe Ser Leu  
 100 105 110  
 Tyr Arg Ile His Trp Asp Gly Tyr Glu His His Pro Ala Asp Gly Tyr  
 115 120 125  
 Asp Gly Pro Gln Gly Gly Gly Tyr Pro Ala Pro Lys Gly Ala Arg Asp  
 130 135 140  
 Ile Tyr Ser Tyr Asp Ile Lys Gly Val Ala Gln Asn Ile Arg Leu Asn  
 145 150 155 160  
 Leu Thr Asp Asn Arg Ser Thr Gly Gln Arg Leu Ala Asp Arg Phe His  
 165 170 175  
 Asn Ala Gly Ser Met Leu Thr Gln Gly Val Gly Asp Gly Phe Lys Arg  
 180 185 190  
 Ala Thr Arg Tyr Ser Pro Glu Leu Asp Arg Ser Gly Asn Ala Ala Glu  
 195 200 205  
 Ala Phe Asn Gly Thr Ala Asp Ile Val Lys Asn Ile Ile Gly Ala Ala  
 210 215 220

Gly Glu Ile  
225

<210> 461  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
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 <223> N= Unknown

<400> 461  
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8

<210> 462  
 <211> 298  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
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 <222> (93)..(93)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (108)..(108)  
 <223> Xaa= any amino acid

<400> 462

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1 5 10 15

Arg Lys Gln Asp Gly Ala His Gln Arg Phe Gly Arg Tyr Gly Ala Thr  
20 25 30

Gln Arg Leu Cys Arg Ser Ser His Pro Arg Leu Gly Ser Pro Lys Pro  
35 40 45

Gln Cys Arg Thr Arg His Arg Ser Arg Gln Gln Tyr Leu Tyr Gly Ser  
50 55 60

His Pro His Gln Arg Asp Trp Ser Cys Pro Gly Lys Ile Gln Leu Gly  
65 70 75 80

Arg His His Gly Thr Ser Cys Arg Ala Val Ala Asp Xaa Arg Asp Arg  
85 90 95

Ile Cys Glu Arg Glu Ile Arg Arg Gln Arg Gln Xaa Cys Arg Cys Arg  
100 105 110

Leu Gly Lys Ile Pro Ser Leu Ser Ile Pro Lys Tyr Pro Leu Lys Leu  
115 120 125

Glu Gln Arg Tyr Gly Lys Glu Asn Ile Thr Ser Ser Thr Val Pro Pro  
130 135 140

Ser Asn Gly Lys Asn Val Lys Leu Ala Asp Gln Arg His Pro Lys Thr  
145 150 155 160

Gly Val Pro Phe Asp Gly Lys Gly Phe Pro Asn Phe Glu Lys His Val  
165 170 175

Lys Tyr Asp Thr Lys Leu Asp Ile Gln Glu Leu Ser Gly Gly Gly Ile  
180 185 190

Pro Lys Ala Lys Pro Val Phe Asp Ala Lys Pro Arg Trp Glu Val Asp  
195 200 205

Arg Lys Leu Asn Lys Leu Thr Thr Arg Glu Gln Val Glu Lys Asn Val  
210 215 220

Gln Glu Thr Arg Arg Arg Ser Gln Ser Ser Gln Phe Lys Ala His Ala  
225 230 235 240

Gln Arg Glu Trp Glu Asn Lys Thr Gly Leu Asp Phe Asn His Phe Ile  
245 250 255

Gly Gly Asp Ile Asn Lys Lys Gly Ala Val Thr Gly Gly His Ser Leu  
260 265 270

Thr Arg Gly Asp Val Arg Val Ile Gln Gln Thr Ser Ala Pro Asp Lys  
275 280 285

His Gly Val Leu Ser Ser Asp Ser Gly Asn

<210> 463  
 <211> 1887  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<220>  
 <221> misc\_feature  
 <222> (175)..(175)  
 <223> N= Unknown

<400> 463  
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 catgcacacg cctcagattt ggcaaacgat cccctttatcc ggcaggttct cgaccgtcag 120  
 catttcgaac ccgacgggaa ataccaccta ttcggcagca ggggggagct tgccnagcgc 180  
 aacggccata tcggattggg aaacatacaa agccatcagt tggggccacct gatgattcaa 240  
 caggcggccg ttgaaggaaa tatcggtac attgtccgct tttccgatca cgggcacaaa 300  
 ttccattcgc ccttcgacaa ccatgcctca cattccgatt ctgacgaagc cggtagtccc 360  
 gttgacggat tcagccttta ccgcatccat tgggacggat acgaacacca tcccgcgac 420  
 ggctatgacg ggccacaggg cggcggtat cccgctccca aaggcgcgag ggatatatac 480  
 agctacgaca taaaaggcgt tgcccaaaat atccgcctca acctgaccga caaccgcagc 540  
 accggacaac ggcttgccga ccgtttccac aatgccggcg ctatgctgac gcaaggagta 600  
 ggcgacggat tcaaacgcgc caccgcatac agccccgagc tggacagatc gggcaatgcc 660  
 gccgaagcct tcaacggcac tgcagatata gtcaaaaaca tcatcggcgc ggcaggagaa 720  
 attgtcggcg caggcgatgc cgtgcagggt ataagcgaag gctcaaacat tgctgtcatg 780  
 cacggcttgg gtctgttttc caccgaaaac aagatggcgc gcatcaacga tttggcagat 840  
 atggcgcaac tcaaagacta tgccgcagca gccatccgcg attgggcagt ccaaaacccc 900  
 aatgccgcac aaggcataga agccgtcagc aatatcttta tggcagccat ccccatcaaa 960  
 gggattggag ctgtccgggg aaaatacggc ttggggcgga tcacggcaca tcctgtcaag 1020  
 cggctgcaga tgggcgcgat cgcattgccg aaagggaaat ccgccgtcag cgacaatttt 1080  
 gccgatgcgg catacgccaa ataccgcctc ccttaccatt cccgaaatat ccgttcaaac 1140  
 ttggagcagc gttacggcaa agaaaacatc acctcctcaa ccgtgccgcg gtcaaacggc 1200  
 aaaaatgtca aactggcaga ccaacgccac ccgaagacag gcgtaccgtt tgacggtaaa 1260  
 gggtttccga attttgagaa gcacgtgaaa tatgatacga agctcgatat tcaagaatta 1320  
 tcggggggcg gtatacctaa ggctaagcct gtgtttgatg cgaaaccgag atgggaggtt 1380  
 gataggaaagc ttaataaatt gacaactcgt gacgaggtgg agaaaaatgt tcaggaaacg 1440  
 agaagaagga gtcagagtag tcagttttaa gcccatgcgc aacgagaatg ggaaaaataa 1500  
 acagggttag attttaatca ttttataggt ggtgatatac ataagaaagg cacagtaaca 1560  
 ggagggcata gtctaaccg tggtgatgta cgggtgatac aacaaacctc ggcacctgat 1620  
 aaacatgggg tttatcaagc gacagtggaa attaaaaagc ctgatggaag ttgggaggtg 1680  
 aaaacgaaaa aaggtgggaa agtgatgacc aagcacacca tgttcccaaa agattgggat 1740  
 gaggctagaa ttagggctga agttacttcg gcttgggaaa gtagaataat gcttaaggat 1800  
 aataaatggc aggtacaag taaatcgggt attaaaaatg aaggatttac cgaacctaat 1860  
 agaacagcat atcccattta tgaatag 1887

<210> 464  
 <211> 628  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<220>  
 <221> misc\_feature  
 <222> (59)..(59)  
 <223> Xaa= any amino acid



<400> 464

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Cys	Leu	Pro	Met	His	Ala	His	Ala	Ser	Asp	Leu	Ala	Asn	Asp	Pro	Phe
			20					25					30		
Ile	Arg	Gln	Val	Leu	Asp	Arg	Gln	His	Phe	Glu	Pro	Asp	Gly	Lys	Tyr
		35					40					45			
His	Leu	Phe	Gly	Ser	Arg	Gly	Glu	Leu	Ala	Xaa	Arg	Asn	Gly	His	Ile
	50					55					60				
Gly	Leu	Gly	Asn	Ile	Gln	Ser	His	Gln	Leu	Gly	His	Leu	Met	Ile	Gln
65				70					75					80	
Gln	Ala	Ala	Val	Glu	Gly	Asn	Ile	Gly	Tyr	Ile	Val	Arg	Phe	Ser	Asp
			85					90						95	
His	Gly	His	Lys	Phe	His	Ser	Pro	Phe	Asp	Asn	His	Ala	Ser	His	Ser
			100					105						110	
Asp	Ser	Asp	Glu	Ala	Gly	Ser	Pro	Val	Asp	Gly	Phe	Ser	Leu	Tyr	Arg
		115					120					125			
Ile	His	Trp	Asp	Gly	Tyr	Glu	His	His	Pro	Ala	Asp	Gly	Tyr	Asp	Gly
	130					135						140			
Pro	Gln	Gly	Gly	Gly	Tyr	Pro	Ala	Pro	Lys	Gly	Ala	Arg	Asp	Ile	Tyr
145					150					155					160
Ser	Tyr	Asp	Ile	Lys	Gly	Val	Ala	Gln	Asn	Ile	Arg	Leu	Asn	Leu	Thr
			165					170						175	
Asp	Asn	Arg	Ser	Thr	Gly	Gln	Arg	Leu	Ala	Asp	Arg	Phe	His	Asn	Ala
			180					185						190	
Gly	Ala	Met	Leu	Thr	Gln	Gly	Val	Gly	Asp	Gly	Phe	Lys	Arg	Ala	Thr
		195					200					205			
Arg	Tyr	Ser	Pro	Glu	Leu	Asp	Arg	Ser	Gly	Asn	Ala	Ala	Glu	Ala	Phe
	210					215					220				
Asn	Gly	Thr	Ala	Asp	Ile	Val	Lys	Asn	Ile	Ile	Gly	Ala	Ala	Gly	Glu
225					230					235					240
Ile	Val	Gly	Ala	Gly	Asp	Ala	Val	Gln	Gly	Ile	Ser	Glu	Gly	Ser	Asn
			245						250					255	
Ile	Ala	Val	Met	His	Gly	Leu	Gly	Leu	Leu	Ser	Thr	Glu	Asn	Lys	Met
		260						265					270		
Ala	Arg	Ile	Asn	Asp	Leu	Ala	Asp	Met	Ala	Gln	Leu	Lys	Asp	Tyr	Ala
		275					280						285		
Ala	Ala	Ala	Ile	Arg	Asp	Trp	Ala	Val	Gln	Asn	Pro	Asn	Ala	Ala	Gln

290	295	300
Gly Ile Glu Ala Val Ser Asn Ile Phe Met Ala Ala Ile Pro Ile Lys 305 310 315 320		
Gly Ile Gly Ala Val Arg Gly Lys Tyr Gly Leu Gly Gly Ile Thr Ala 325 330 335		
His Pro Val Lys Arg Ser Gln Met Gly Ala Ile Ala Leu Pro Lys Gly 340 345 350		
Lys Ser Ala Val Ser Asp Asn Phe Ala Asp Ala Ala Tyr Ala Lys Tyr 355 360 365		
Pro Ser Pro Tyr His Ser Arg Asn Ile Arg Ser Asn Leu Glu Gln Arg 370 375 380		
Tyr Gly Lys Glu Asn Ile Thr Ser Ser Thr Val Pro Pro Ser Asn Gly 385 390 395 400		
Lys Asn Val Lys Leu Ala Asp Gln Arg His Pro Lys Thr Gly Val Pro 405 410 415		
Phe Asp Gly Lys Gly Phe Pro Asn Phe Glu Lys His Val Lys Tyr Asp 420 425 430		
Thr Lys Leu Asp Ile Gln Glu Leu Ser Gly Gly Gly Ile Pro Lys Ala 435 440 445		
Lys Pro Val Phe Asp Ala Lys Pro Arg Trp Glu Val Asp Arg Lys Leu 450 455 460		
Asn Lys Leu Thr Thr Arg Glu Gln Val Glu Lys Asn Val Gln Glu Thr 465 470 475 480		
Arg Arg Arg Ser Gln Ser Ser Gln Phe Lys Ala His Ala Gln Arg Glu 485 490 495		
Trp Glu Asn Lys Thr Gly Leu Asp Phe Asn His Phe Ile Gly Gly Asp 500 505 510		
Ile Asn Lys Lys Gly Thr Val Thr Gly Gly His Ser Leu Thr Arg Gly 515 520 525		
Asp Val Arg Val Ile Gln Gln Thr Ser Ala Pro Asp Lys His Gly Val 530 535 540		
Tyr Gln Ala Thr Val Glu Ile Lys Lys Pro Asp Gly Ser Trp Glu Val 545 550 555 560		
Lys Thr Lys Lys Gly Gly Lys Val Met Thr Lys His Thr Met Phe Pro 565 570 575		
Lys Asp Trp Asp Glu Ala Arg Ile Arg Ala Glu Val Thr Ser Ala Trp 580 585 590		

Glu Ser Arg Ile Met Leu Lys Asp Asn Lys Trp Gln Gly Thr Ser Lys  
 595 600 605

Ser Gly Ile Lys Ile Glu Gly Phe Thr Glu Pro Asn Arg Thr Ala Tyr  
 610 615 620

Pro Ile Tyr Glu  
 625

<210> 465  
 <211> 1671  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 465  
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 catttcgaac ccgacgggaa ataccaccta ttccggcagca gggggggaact tgccgagcgc 180  
 agcgggtcata tcggattggg aaacatacaa agccatcagt tgggcaacct gttcatccag 240  
 caggcggcca ttaaaggaaa tatcggtac attgtccgct tttccgatca cgggcacgaa 300  
 gtccattccc ccttcgacaa ccattgcctca cattccgatt ctgatgaagc cggtagtccc 360  
 gttgacggat tcagccttta ccgcatccat tgggacggat acgaacacca tcccgccgac 420  
 ggctatgacg ggccacaggg cggcggctat cccgctccca aaggcgcgag ggatatatac 480  
 agctacgaca taaaaggcgt tgcccaaaat atccgcctca acctgaccga caaccgcagc 540  
 accggacaac ggcttgctga ccgtttccac aataccggta gtatgctgac gcaaggagta 600  
 ggcgacggat tcaaacgcgc caccgcatac agccccgagc tggacagatc gggcaatgcc 660  
 gccgaagctt tcaacggcac tgcagatata gtcaaaaaca tcatcggcgc ggcaggagaa 720  
 attgtcggcg caggcgatgc cgtgcagggt ataagcgaag gctcaaacad tgctgttatg 780  
 cacggcttgg gtctgcttcc caccgaaaac aagatggcgc gcatcaacga tttggcagat 840  
 atggcgcaac tcaaagacta tgccgcagca gccatccgcg attgggcagt ccaaaacccc 900  
 aatgccgcac aaggcataga agccgtcagc aatatcttta cggcagtcac ccccgctcaa 960  
 gggattggag ctgttcgggg aaaatacggc ttgggcggca tcacggcaca tcctgtcaag 1020  
 cggtcgcaga tgggcgagat cgcattgccg aaagggaaat ccgccgtcag cgacaatttt 1080  
 gccgatgcgg catacgccaa ataccgcgtc ccttaccatt cccgaaatat ccgttcaaac 1140  
 ttggagcagc gttacggcaa agaaaacatc acctcctcaa ccgtgccgcc gtcaaacgga 1200  
 aagaatgtga aactggcaaa caaacgccac ccgaagacca aagtgccgtt tgacggtaaa 1260  
 gggtttccga attttgaaaa agacgtaaaa tacgatacga gaattaatac cgctgtacca 1320  
 caagtgaatc ctatagatga acccgtcttt aatcctaaag gttctgtcgg atcgggtcat 1380  
 tcttgggtcta taactgccag aattcaatac gcaaaattac caaggcaagg tagaatcaga 1440  
 tataatccac ctaaaaatta ctctccttca gcaccgctac caaaaggacc taataatgga 1500  
 tatttgata aatttggtaa tgaatggact aaaggtccat caagaactaa aggtcaagaa 1560  
 tttgaatggg atgttcaatt gtctaaaaca ggaagagagc aacttggatg ggctagtagg 1620  
 gatggtgaagc atttaaatat atcaattgat ggaaagatta cacacaaatg a 1671

<210> 466  
 <211> 556  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 466  
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 Cys Leu Pro Met His Ala His Ala Ser Asp Leu Ala Asn Asp Ser Phe  
 20 25 30

Ile	Arg	Gln	Val	Leu	Asp	Arg	Gln	His	Phe	Glu	Pro	Asp	Gly	Lys	Tyr	35	40	45
His	Leu	Phe	Gly	Ser	Arg	Gly	Glu	Leu	Ala	Glu	Arg	Ser	Gly	His	Ile	50	55	60
Gly	Leu	Gly	Asn	Ile	Gln	Ser	His	Gln	Leu	Gly	Asn	Leu	Phe	Ile	Gln	65	70	75
Gln	Ala	Ala	Ile	Lys	Gly	Asn	Ile	Gly	Tyr	Ile	Val	Arg	Phe	Ser	Asp	85	90	95
His	Gly	His	Glu	Val	His	Ser	Pro	Phe	Asp	Asn	His	Ala	Ser	His	Ser	100	105	110
Asp	Ser	Asp	Glu	Ala	Gly	Ser	Pro	Val	Asp	Gly	Phe	Ser	Leu	Tyr	Arg	115	120	125
Ile	His	Trp	Asp	Gly	Tyr	Glu	His	His	Pro	Ala	Asp	Gly	Tyr	Asp	Gly	130	135	140
Pro	Gln	Gly	Gly	Gly	Tyr	Pro	Ala	Pro	Lys	Gly	Ala	Arg	Asp	Ile	Tyr	145	150	155
Ser	Tyr	Asp	Ile	Lys	Gly	Val	Ala	Gln	Asn	Ile	Arg	Leu	Asn	Leu	Thr	165	170	175
Asp	Asn	Arg	Ser	Thr	Gly	Gln	Arg	Leu	Val	Asp	Arg	Phe	His	Asn	Thr	180	185	190
Gly	Ser	Met	Leu	Thr	Gln	Gly	Val	Gly	Asp	Gly	Phe	Lys	Arg	Ala	Thr	195	200	205
Arg	Tyr	Ser	Pro	Glu	Leu	Asp	Arg	Ser	Gly	Asn	Ala	Ala	Glu	Ala	Phe	210	215	220
Asn	Gly	Thr	Ala	Asp	Ile	Val	Lys	Asn	Ile	Ile	Gly	Ala	Ala	Gly	Glu	225	230	235
Ile	Val	Gly	Ala	Gly	Asp	Ala	Val	Gln	Gly	Ile	Ser	Glu	Gly	Ser	Asn	245	250	255
Ile	Ala	Val	Met	His	Gly	Leu	Gly	Leu	Leu	Ser	Thr	Glu	Asn	Lys	Met	260	265	270
Ala	Arg	Ile	Asn	Asp	Leu	Ala	Asp	Met	Ala	Gln	Leu	Lys	Asp	Tyr	Ala	275	280	285
Ala	Ala	Ala	Ile	Arg	Asp	Trp	Ala	Val	Gln	Asn	Pro	Asn	Ala	Ala	Gln	290	295	300
Gly	Ile	Glu	Ala	Val	Ser	Asn	Ile	Phe	Thr	Ala	Val	Ile	Pro	Val	Lys	305	310	315
Gly	Ile	Gly	Ala	Val	Arg	Gly	Lys	Tyr	Gly	Leu	Gly	Gly	Ile	Thr	Ala	325	330	335

His Pro Val Lys Arg Ser Gln Met Gly Glu Ile Ala Leu Pro Lys Gly  
 340 345 350  
 Lys Ser Ala Val Ser Asp Asn Phe Ala Asp Ala Ala Tyr Ala Lys Tyr  
 355 360 365  
 Pro Ser Pro Tyr His Ser Arg Asn Ile Arg Ser Asn Leu Glu Gln Arg  
 370 375 380  
 Tyr Gly Lys Glu Asn Ile Thr Ser Ser Thr Val Pro Pro Ser Asn Gly  
 385 390 395 400  
 Lys Asn Val Lys Leu Ala Asn Lys Arg His Pro Lys Thr Lys Val Pro  
 405 410 415  
 Phe Asp Gly Lys Gly Phe Pro Asn Phe Glu Lys Asp Val Lys Tyr Asp  
 420 425 430  
 Thr Arg Ile Asn Thr Ala Val Pro Gln Val Asn Pro Ile Asp Glu Pro  
 435 440 445  
 Val Phe Asn Pro Lys Gly Ser Val Gly Ser Ala His Ser Trp Ser Ile  
 450 455 460  
 Thr Ala Arg Ile Gln Tyr Ala Lys Leu Pro Arg Gln Gly Arg Ile Arg  
 465 470 475 480  
 Tyr Ile Pro Pro Lys Asn Tyr Ser Pro Ser Ala Pro Leu Pro Lys Gly  
 485 490 495  
 Pro Asn Asn Gly Tyr Leu Asp Lys Phe Gly Asn Glu Trp Thr Lys Gly  
 500 505 510  
 Pro Ser Arg Thr Lys Gly Gln Glu Phe Glu Trp Asp Val Gln Leu Ser  
 515 520 525  
 Lys Thr Gly Arg Glu Gln Leu Gly Trp Ala Ser Arg Asp Gly Lys His  
 530 535 540  
 Leu Asn Ile Ser Ile Asp Gly Lys Ile Thr His Lys  
 545 550 555

<210> 467  
 <211> 357  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 467  
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 ctgctgctgt ccctgctgat actgcttgcc cccaatgcgg tgttttgggt ttgggactg 120  
 ctgaccgcca ccgcccggcc gattgtcaat ttggactatc ttcccggcgc gctgctgatc 180  
 gccctgcctt ggcgtttcgt caaaattgcc ggcgtattgg cgttttggct ggcgggtttg 240  
 ttgacgggc tgatgatggt gatccaactc ttccctttta tggatctcat cggcgccatc 300  
 aacctcgtcc ctttcattcct gaccgcccc gcccttatc agataatgac cgggctg 357

<210> 468

<211> 119  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 468

Met Asn Ile His Thr Leu Leu Ser Lys Gln Trp Thr Leu Pro Pro Phe  
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 Leu Pro Lys Arg Leu Leu Leu Ser Leu Leu Ile Leu Leu Ala Pro Asn  
 20 25 30  
 Ala Val Phe Trp Val Leu Ala Leu Leu Thr Ala Thr Ala Arg Pro Ile  
 35 40 45  
 Val Asn Leu Asp Tyr Leu Pro Ala Ala Leu Leu Ile Ala Leu Pro Trp  
 50 55 60  
 Arg Phe Val Lys Ile Ala Gly Val Leu Ala Phe Trp Leu Ala Val Leu  
 65 70 75 80  
 Phe Asp Gly Leu Met Met Val Ile Gln Leu Phe Pro Phe Met Asp Leu  
 85 90 95  
 Ile Gly Ala Ile Asn Leu Val Pro Phe Ile Leu Thr Ala Pro Ala Pro  
 100 105 110  
 Tyr Gln Ile Met Thr Gly Leu  
 115

<210> 469  
 <211> 1419  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 469

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ctgaccgcc	ccgcccgc	gattgtcaat	ttggactatc	ttcccgcgc	gctgctgac	180
gccctgcctt	ggcgcttcgt	caaaattgcc	ggcgatttgg	cgttttggct	ggcggttttg	240
tttgacgggc	tgatgatggt	gatccaactc	ttccctttta	tggatctcat	cggcgccatc	300
aacctcgtcc	ccttcaccc	gaccgcccc	gccccttacc	agataatgac	cgggctgttg	360
ctgctgtata	tgctggcgat	gccgtttgtg	ttgcagaaag	ccgcccgc	aaaccgacttc	420
cggcacattg	ccgtctgcgc	cgccgttggt	gcggcagccg	gctatttcac	cgccatttg	480
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aaaagtcagg	cgatgctcta	caccgtcagc	cagaatgccg	actttattac	cgccggcctg	600
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 <213> Neisseria meningitidis

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 Ala Val Phe Trp Val Leu Ala Leu Leu Thr Ala Thr Ala Arg Pro Ile  
 35 40 45  
 Val Asn Leu Asp Tyr Leu Pro Ala Ala Leu Leu Ile Ala Leu Pro Trp  
 50 55 60  
 Arg Phe Val Lys Ile Ala Gly Val Leu Ala Phe Trp Leu Ala Val Leu  
 65 70 75 80  
 Phe Asp Gly Leu Met Met Val Ile Gln Leu Phe Pro Phe Met Asp Leu  
 85 90 95  
 Ile Gly Ala Ile Asn Leu Val Pro Phe Ile Leu Thr Ala Pro Ala Pro  
 100 105 110  
 Tyr Gln Ile Met Thr Gly Leu Leu Leu Leu Tyr Met Leu Ala Met Pro  
 115 120 125  
 Phe Val Leu Gln Lys Ala Ala Ala Lys Thr Asp Phe Arg His Ile Ala  
 130 135 140  
 Val Cys Ala Ala Val Val Ala Ala Ala Gly Tyr Phe Thr Gly His Leu  
 145 150 155 160  
 Ser Tyr Tyr Asp Arg Gly Arg Met Ala Asn Ile Phe Gly Ala Asn Asn  
 165 170 175  
 Phe Tyr Tyr Ala Lys Ser Gln Ala Met Leu Tyr Thr Val Ser Gln Asn  
 180 185 190  
 Ala Asp Phe Ile Thr Ala Gly Leu Val Asp Pro Val Phe Leu Pro Leu  
 195 200 205  
 Gly Asn Gln Gln Arg Ala Ala Thr His Leu Asn Glu Pro Lys Ser Gln  
 210 215 220  
 Lys Ile Leu Phe Ile Val Ala Glu Ser Trp Gly Leu Pro Ala Asn Pro  
 225 230 235 240  
 Glu Leu Gln Asn Ala Thr Phe Ala Lys Leu Leu Ala Gln Lys Asp Arg

245								250				255				
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275								280				285				
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Arg	Leu	Lys	Gln	Glu	Gly	Tyr	Ala	Thr	Phe	Ala	Met	His	Gly	Ala	Gly	
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Ser	Ser	Leu	Tyr	Asp	Arg	Phe	Ser	Trp	Tyr	Pro	Arg	Ala	Gly	Phe	Gln	
325								330				335				
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340								345				350				
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355								360				365				
Phe	Lys	Lys	His	Asp	Lys	Gly	Leu	Phe	Tyr	Trp	Met	Thr	Leu	Thr	Ser	
370								375				380				
His	Ala	Asp	Tyr	Pro	Glu	Ser	Asp	Ile	Phe	Asn	His	Arg	Leu	Lys	Cys	
385								390				395				
Thr	Glu	Tyr	Gly	Leu	Pro	Ala	Glu	Thr	Asp	Leu	Cys	Arg	Asn	Phe	Ser	
405								410				415				
Leu	His	Thr	Gln	Phe	Phe	Asp	Gln	Leu	Ala	Asp	Leu	Ile	Gln	Arg	Pro	
420								425				430				
Glu	Met	Lys	Gly	Thr	Glu	Val	Ile	Ile	Val	Gly	Asp	His	Pro	Pro	Pro	
435								440				445				
Val	Gly	Asn	Leu	Asn	Glu	Thr	Phe	Arg	Tyr	Leu	Lys	Gln	Gly	His	Val	
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<223> N= Unknown

<400> 471

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ctgaccgc	ccgcccgc	gattgtca	ttggantac	ttcccgcg	gctgctgat	180
gccctgc	ggcgtntc	caaaattg	ggcgtatt	cgtnttgg	ggcggtttt	240
tttgacgg	tgatgatg	gatccaac	ttcccttt	tggatctc	cggcgccat	300
aacctcgt	ccttcacn	gaccgcccc	gccctttat	agataatg	cgggctgtt	360
ctgctgtat	tgctggcg	gccgtttgt	ttgcagaa	ccgccgcaa	aaccgactt	420
cgacacatt	ccgcctgt	cgccgttgt	gtggcagcc	gctatttt	cggccattt	480
agttantac	accgggggc	gatggcca	atcttcgg	caaacaact	ctattacgc	540
aaaagtcag	cgatgctc	caccgtcag	cagaatgcc	actttatt	cgccggcct	600
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ccgaaatct	aaaaaatc	ctttatcgt	gccgaatct	gggggctgc	ggccaatccc	720
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tgcttcccc	accgtttga	acaagaagg	tacgccacct	ttgcgatgc	cggcgcggg	960
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gccgaaaac	tgatcggta	aaaaacctg	gccattttc	gcggcgtgt	cgacagcgag	1080
ctgttcggc	aagtgtcgg	anttttcaa	aaacacgac	agggactgt	ttactggat	1140
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accgaatat	gcctgcccc	cgaaaccgac	ntctgccgc	atttcagcct	gcacacccaa	1260
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atcgtcggc	accatccgc	gcccgtcgg	aacctcaat	aaaccttccg	ctacctcaa	1380
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<213> *Neisseria meningitidis*

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<400> 472

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			20					25					30		

Ala	Val	Phe	Trp	Val	Leu	Ala	Leu	Leu	Thr	Ala	Thr	Ala	Arg	Pro	Ile
		35					40					45			

Val	Asn	Leu	Xaa	Tyr	Leu	Pro	Ala	Ala	Leu	Leu	Ile	Ala	Leu	Pro	Trp
	50					55					60				

Arg	Xaa	Val	Lys	Ile	Xaa	Gly	Val	Leu	Ala	Xaa	Trp	Leu	Ala	Val	Leu
65					70					75				80	

Phe	Asp	Gly	Leu	Met	Met	Val	Ile	Gln	Leu	Phe	Pro	Phe	Met	Asp	Leu
				85					90					95	

Ile	Gly	Ala	Ile	Asn	Leu	Val	Pro	Phe	Ile	Xaa	Thr	Ala	Pro	Ala	Leu
			100						105					110	

Tyr	Gln	Ile	Met	Thr	Gly	Leu	Leu	Leu	Leu	Tyr	Met	Leu	Ala	Met	Pro
		115					120						125		

Phe	Val	Leu	Gln	Lys	Ala	Ala	Ala	Lys	Thr	Asp	Phe	Arg	His	Ile	Ala	130	135	140
Ala	Cys	Ala	Ala	Val	Val	Val	Ala	Ala	Gly	Tyr	Phe	Thr	Gly	His	Leu	145	150	155
Ser	Xaa	Tyr	Asp	Arg	Gly	Arg	Met	Ala	Asn	Ile	Phe	Gly	Ala	Asn	Asn	165	170	175
Phe	Tyr	Tyr	Ala	Lys	Ser	Gln	Ala	Met	Leu	Tyr	Thr	Val	Ser	Gln	Asn	180	185	190
Ala	Asp	Phe	Ile	Thr	Ala	Gly	Leu	Val	Asp	Pro	Val	Phe	Leu	Pro	Leu	195	200	205
Gly	Asn	Gln	Gln	Arg	Ala	Ala	Thr	His	Leu	Asn	Glu	Pro	Lys	Ser	Gln	210	215	220
Lys	Ile	Leu	Phe	Ile	Val	Ala	Glu	Ser	Trp	Gly	Leu	Pro	Ala	Asn	Pro	225	230	235
Glu	Leu	Gln	Asn	Ala	Thr	Phe	Ala	Lys	Leu	Leu	Ala	Gln	Lys	Xaa	Arg	245	250	255
Phe	Ser	Val	Trp	Glu	Ser	Gly	Ser	Phe	Pro	Phe	Ile	Gly	Ala	Thr	Ile	260	265	270
Glu	Gly	Glu	Met	Arg	Glu	Leu	Cys	Ala	Tyr	Gly	Gly	Leu	Arg	Gly	Phe	275	280	285
Ala	Leu	Arg	Arg	Ala	Pro	Asp	Glu	Lys	Phe	Ala	Arg	Cys	Leu	Pro	Asn	290	295	300
Arg	Leu	Lys	Gln	Glu	Gly	Tyr	Ala	Thr	Phe	Ala	Met	His	Gly	Ala	Gly	305	310	315
Ser	Ser	Leu	Tyr	Asp	Arg	Phe	Ser	Trp	Tyr	Pro	Arg	Ala	Gly	Phe	Gln	325	330	335
Glu	Ile	Lys	Thr	Ala	Glu	Asn	Leu	Ile	Gly	Lys	Lys	Thr	Cys	Ala	Ile	340	345	350
Phe	Gly	Gly	Val	Cys	Asp	Ser	Glu	Leu	Phe	Gly	Glu	Val	Ser	Ala	Xaa	355	360	365
Phe	Lys	Lys	His	Asp	Lys	Gly	Leu	Phe	Tyr	Trp	Met	Thr	Leu	Thr	Ser	370	375	380
His	Ala	Asp	Tyr	Pro	Glu	Ser	Asp	Ile	Phe	Asn	His	Arg	Leu	Lys	Cys	385	390	395
Thr	Glu	Tyr	Gly	Leu	Pro	Ala	Glu	Thr	Asp	Xaa	Cys	Arg	Asn	Phe	Ser	405	410	415
Leu	His	Thr	Gln	Phe	Phe	Asp	Gln	Leu	Ala	Asp	Leu	Ile	Gln	Arg	Pro	420	425	430

Glu Met Lys Gly Thr Glu Val Ile Ile Val Gly Asp His Pro Pro Pro  
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Val Gly Asn Leu Asn Glu Thr Phe Arg Tyr Leu Lys Gln Gly His Val  
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Xaa Trp Leu Asn Phe Lys Ile Lys  
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<213> Neisseria gonorrhoeae

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<213> Neisseria gonorrhoeae

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Ala Val Phe Trp Val Leu Ala Leu Leu Thr Ala Thr Ala Arg Pro Ile  
35 40 45  
Val Asn Leu Asp Tyr Leu Pro Ala Ala Leu Leu Ile Ala Leu Pro Trp  
50 55 60  
Arg Phe Val Lys Ile Ala Gly Val Leu Ala Phe Trp Pro Ala Val Leu  
65 70 75 80  
Phe Asp Gly Leu Met Met Val Ile Gln Leu Phe Pro Phe Met Asp Leu  
85 90 95  
Ile Gly Ala Ile Asn Leu Val Pro Phe Ile Leu Thr Ala Pro Ala Pro  
100 105 110  
Tyr Gln Ile Met Thr Gly Leu Leu Leu Leu Tyr Met Leu Ala Met Pro  
115 120 125  
Phe Val Leu Gln Lys Ala Ala Val Lys Thr Asp Phe Arg His Ile Ala  
130 135 140  
Val Cys Ala Ala Val Val Ala Ala Ala Arg Tyr Phe Thr Gly Pro Phe

145		150		155		160
Glu Leu Leu Arg Thr Gly Gly Arg Trp Gln Tyr Val Gln His Arg Arg						
	165			170		175
Leu Leu Leu Ser Gly Ser Arg Ala Ser Phe Arg Arg Arg Gln Lys Ala						
	180		185			190
Asp Val Leu Arg Arg Leu Gly Asn Pro Tyr Ala Ser Met Gly Asn Gly						
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Gly

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 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 475

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ctgaccgc	ccgccgcg	gattgtca	ttggacta	ttcccgcg	gctgctga	180
gccctgc	ggcgtttc	caaaattg	ggcgattg	cgttttgg	ggcggttt	240
tttgacgg	tgatgatg	gatccaac	ttcccttt	tggacctc	cggcgccat	300
aacctcgt	ccttcata	gaccgcccc	gcccctta	agataatg	cgggctgt	360
ctgctgt	tgctggcg	gccgtttg	ttgcaaaa	ccgccgtc	aaccgact	420
cgacacatt	ccgtctgt	cgccgttg	gcggcagc	gctatttc	cggccatt	480
agttacta	accggggg	gatggcca	atcttcgg	caaacaac	ctattacg	540
aaaagtc	cgatgctc	caccgtca	cagaatgc	actttatt	cgccggcc	600
gtcgaccc	tcttctcc	cttgggca	cagcagcg	ccgccacg	gctgagt	660
ccgaaatc	aaaaaatc	ctttatcg	gccgaatc	gggggctg	gggcaatc	720
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gaaagcgg	gttttccc	catcggcg	acggtcga	gcgaaatg	cgaattgt	840
gcctacgg	gtttgcgc	gttcgcac	cgccgcgc	ccgacgaa	atttgcgc	900
tgctcccca	accgtttg	acaagaag	tacgccac	ttgcgatg	cggcgcggt	960
agttcgct	acgaccgt	cagctggt	ccgaggcg	gctttca	aatcaaac	1020
gccgaaa	tgatcggt	aaaaacct	gccatttt	gcggcggt	cgacagcg	1080
ctgttcgg	aagtgtcg	atttttca	aaacacga	agggactg	ttactgg	1140
acgctgac	gccacgcc	ctatcccg	tccgacat	tcaaccac	gctcaa	1200
accgaata	gcctgccg	cgaaaccg	ctctgccg	atttcagc	gcacacca	1260
ttcttcga	aactggcg	tttgatcc	cgccccga	tgaaaggc	ggaagtc	1320
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cagggac	tcgcctgg	gcatttca	atcaata			1419

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 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 476

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20	25	30	

Ala Val Phe Trp Val Leu Ala Leu Leu Thr Ala Thr Ala Arg Pro Ile  
 35 40 45  
 Val Asn Leu Asp Tyr Leu Pro Ala Ala Leu Leu Ile Ala Leu Pro Trp  
 50 55 60  
 Arg Phe Val Lys Ile Ala Gly Val Leu Ala Phe Trp Pro Ala Val Leu  
 65 70 75 80  
 Phe Asp Gly Leu Met Met Val Ile Gln Leu Phe Pro Phe Met Asp Leu  
 85 90 95  
 Ile Gly Ala Ile Asn Leu Val Pro Phe Ile Leu Thr Ala Pro Ala Pro  
 100 105 110  
 Tyr Gln Ile Met Thr Gly Leu Leu Leu Leu Tyr Met Leu Ala Met Pro  
 115 120 125  
 Phe Val Leu Gln Lys Ala Ala Val Lys Thr Asp Phe Arg His Ile Ala  
 130 135 140  
 Val Cys Ala Ala Val Val Ala Ala Ala Gly Tyr Phe Thr Gly His Leu  
 145 150 155 160  
 Ser Tyr Tyr Asp Arg Gly Arg Met Ala Asn Ile Phe Gly Ala Asn Asn  
 165 170 175  
 Phe Tyr Tyr Ala Lys Ser Gln Ala Met Leu Tyr Thr Val Ser Gln Asn  
 180 185 190  
 Ala Asp Phe Ile Thr Ala Gly Leu Val Asp Pro Val Phe Leu Pro Leu  
 195 200 205  
 Gly Asn Gln Gln Arg Ala Ala Thr Arg Leu Ser Glu Pro Lys Ser Gln  
 210 215 220  
 Lys Ile Leu Phe Ile Val Ala Glu Ser Trp Gly Leu Pro Gly Asn Pro  
 225 230 235 240  
 Glu Leu Gln Asn Ala Thr Phe Ala Lys Leu Leu Ala Gln Lys Asp Arg  
 245 250 255  
 Phe Ser Val Trp Glu Ser Gly Ser Phe Pro Phe Ile Gly Ala Thr Val  
 260 265 270  
 Glu Gly Glu Met Arg Glu Leu Cys Ala Tyr Gly Gly Leu Arg Gly Phe  
 275 280 285  
 Ala Leu Arg Arg Ala Pro Asp Glu Lys Phe Ala Arg Cys Leu Pro Asn  
 290 295 300  
 Arg Leu Lys Gln Glu Gly Tyr Ala Thr Phe Ala Met His Gly Ala Gly  
 305 310 315 320  
 Ser Ser Leu Tyr Asp Arg Phe Ser Trp Tyr Pro Arg Ala Gly Phe Gln  
 325 330 335

Lys Ile Lys Thr Ala Glu Asn Leu Ile Gly Lys Lys Thr Cys Ala Ile  
 340 345 350

Phe Gly Gly Val Cys Asp Ser Glu Leu Phe Gly Glu Val Ser Ala Phe  
 355 360 365

Phe Lys Lys His Asp Lys Gly Leu Phe Tyr Trp Met Thr Leu Thr Ser  
 370 375 380

His Ala Asp Tyr Pro Glu Ser Asp Ile Phe Asn His Arg Leu Lys Cys  
 385 390 395 400

Thr Glu Tyr Gly Leu Pro Ala Glu Thr Asp Leu Cys Arg Asn Phe Ser  
 405 410 415

Leu His Thr Gln Phe Phe Asp Gln Leu Ala Asp Leu Ile Arg Arg Pro  
 420 425 430

Glu Met Lys Gly Thr Glu Val Ile Ile Val Gly Asp His Pro Pro Pro  
 435 440 445

Val Gly Asn Leu Asn Glu Thr Phe Arg Tyr Leu Lys Gln Gly His Val  
 450 455 460

Ala Trp Leu His Phe Lys Ile Lys  
 465 470

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 <213> Neisseria meningitidis

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 agtgcggttt tggctttggt tttccttgca ctgggcgcgt agcgccgaac ggcaacggcg 360  
 aacagtgcag atggcgggcg gcaaataaa cgggcaattg atcaatatgt acgcc 415

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 <213> Neisseria meningitidis

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 <223> Xaa= any amino acid

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Arg Gly Met Gln Met Gln Ser Asp Phe Ile Glu Pro Thr Pro Trp Thr  
35 40 45

Leu Ala Gly Leu Gly Phe Leu Ile Ala Leu Met Gly Trp Met Pro Ala  
50 55 60

Pro Ile Glu Ile Ser Ala Ile Asn Ser Leu Trp Val Thr Glu Lys Gln  
65 70 75 80

Arg Ile Asn Pro Ser Glu Tyr Arg Asp Gly Ile Phe Glu Phe Asn Val  
85 90 95

Gly Tyr Ile Ala Ser Ala Val Leu Ala Leu Val Phe Leu Ala Leu Gly  
100 105 110

Xaa Val Ala Pro Asn Gly Asn Gly Xaa Thr Val Gln Met Ala Gly Gly  
115 120 125

Lys Tyr Asn Gly Gln Leu Ile Asn Met Tyr Ala  
130 135

<210> 479

<211> 1254

<212> DNA

<213> Neisseria meningitidis

<400> 479

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ttccgcttca	gcgcgcatta	cacgctggac	acgggcaaga	gcctgattga	aggttatgcc	240
gagaaaagcc	gcgtttatct	gtgggtattc	ctgattttgt	gcaccccttc	cgccacgatt	300
aacgcggggc	cggtcgccat	tgtaaccgcc	gccatcgctc	aaatggcgat	tccctcgctg	360
atgtttgatg	ccggcacggg	tgccgccttg	attatggcat	cctgcctgat	tattttgggtg	420
agcggacggt	accgcgcttt	ggatcgcggt	tccaaaatca	tcatcgttac	tttgagtatc	480
gccacgcttg	ccgcgcggcg	catcgctatg	tgcgcgggta	tgacgatgca	gtccgatttt	540
atcgagccga	caccgtggac	gcttgccggg	ttgggcttcc	tgatcgcgct	gatgggctgg	600
atgcccgcgc	cgattgaaat	ttccgccatc	aattctttgt	gggtaaccga	aaaacaacgc	660
atcaatcctt	ccgaataacc	cgacgggatt	tttgatttca	acgtcgggta	tatcgccagt	720
gcgggttttg	ctttgggttt	ccttgcaactg	ggcgcggttg	tgcaatacgg	caacggcgaa	780
gcagtgcaga	tggcgggcgg	caaataatc	gggcaattga	tcaatatgta	cgccgttacc	840
atcgggcggt	ggtcgcgccc	gctgggtggc	tttatcgctg	ttgcctgtat	gtacggcacg	900
acgattaccg	tcgtggacgg	ctatgcccg	gccattgccg	aacccgtg	cctgctgcgc	960
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ggtttgccgg	tgattttctg	gtttgacggc	gtaatggcga	atctgctcaa	atttgcgatg	1080
attgcccgtt	ttgtgtccgc	ccctgtgttt	gcctggctga	attaccgttt	ggttaaaggt	1140
gatgaaaac	acaaactcac	atcagggtatg	aatgcccttg	cattggcagg	cttgatttat	1200
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<210> 480  
<211> 417  
<212> PRT  
<213> Neisseria meningitidis

<400> 480

Met Ser Glu Gln His Ile Ser Thr Trp Lys Ser Lys Ile Asn Ala Leu  
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20 25 30  
Ile Ala Ser Thr Gln Ala Gly Ala Leu Tyr Gly Trp Gln Ile Ala Leu  
35 40 45  
Ile Ile Ile Leu Thr Asn Leu Phe Lys Tyr Pro Phe Phe Arg Phe Ser  
50 55 60  
Ala His Tyr Thr Leu Asp Thr Gly Lys Ser Leu Ile Glu Gly Tyr Ala  
65 70 75 80  
Glu Lys Ser Arg Val Tyr Leu Trp Val Phe Leu Ile Leu Cys Ile Leu  
85 90 95  
Ser Ala Thr Ile Asn Ala Gly Ala Val Ala Ile Val Thr Ala Ala Ile  
100 105 110  
Val Lys Met Ala Ile Pro Ser Leu Met Phe Asp Ala Gly Thr Val Ala  
115 120 125  
Ala Leu Ile Met Ala Ser Cys Leu Ile Ile Leu Val Ser Gly Arg Tyr  
130 135 140  
Arg Ala Leu Asp Arg Val Ser Lys Ile Ile Ile Val Thr Leu Ser Ile  
145 150 155 160  
Ala Thr Leu Ala Ala Ala Gly Ile Ala Met Ser Arg Gly Met Gln Met  
165 170 175  
Gln Ser Asp Phe Ile Glu Pro Thr Pro Trp Thr Leu Ala Gly Leu Gly  
180 185 190  
Phe Leu Ile Ala Leu Met Gly Trp Met Pro Ala Pro Ile Glu Ile Ser  
195 200 205  
Ala Ile Asn Ser Leu Trp Val Thr Glu Lys Gln Arg Ile Asn Pro Ser  
210 215 220  
Glu Tyr Arg Asp Gly Ile Phe Asp Phe Asn Val Gly Tyr Ile Ala Ser  
225 230 235 240  
Ala Val Leu Ala Leu Val Phe Leu Ala Leu Gly Ala Phe Val Gln Tyr  
245 250 255  
Gly Asn Gly Glu Ala Val Gln Met Ala Gly Gly Lys Tyr Ile Gly Gln  
260 265 270

Leu Ile Asn Met Tyr Ala Val Thr Ile Gly Gly Trp Ser Arg Pro Leu  
 275 280 285  
 Val Ala Phe Ile Ala Phe Ala Cys Met Tyr Gly Thr Thr Ile Thr Val  
 290 295 300  
 Val Asp Gly Tyr Ala Arg Ala Ile Ala Glu Pro Val Arg Leu Leu Arg  
 305 310 315 320  
 Gly Lys Asp Lys Thr Gly Asn Ala Glu Phe Phe Ala Trp Asn Ile Trp  
 325 330 335  
 Val Ala Gly Ser Gly Leu Ala Val Ile Phe Trp Phe Asp Gly Val Met  
 340 345 350  
 Ala Asn Leu Leu Lys Phe Ala Met Ile Ala Ala Phe Val Ser Ala Pro  
 355 360 365  
 Val Phe Ala Trp Leu Asn Tyr Arg Leu Val Lys Gly Asp Glu Lys His  
 370 375 380  
 Lys Leu Thr Ser Gly Met Asn Ala Leu Ala Leu Ala Gly Leu Ile Tyr  
 385 390 395 400  
 Leu Thr Gly Phe Thr Val Leu Phe Leu Leu Asn Leu Ala Gly Met Phe  
 405 410 415

Lys

<210> 481  
 <211> 1254  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 481  
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 ttccgcttca gcgcgcatta cacgctggac acgggcaaga gcctgattga aggttatgcc 240  
 gagaaaagcc gcgtttatatt gtgggtattc ctgattttgt gcaccccttc cgccacgatt 300  
 aacgcgggcg cggtcgccat tgtaaccgcc gccatcgtca aaatggcgat tccctcgctg 360  
 atgtttgatg ccggcacggt tgccgccttg attatggcat cctgcctgat tattttggtg 420  
 agcggacgtt accgcgcttt ggatcgcggt tccaaaatca tcatcgttac tttgagtac 480  
 gccacgcttg ccgcgcgagg catcgctatg tcgcgcggta tgcagatgca gtccgatttt 540  
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 atcaatcctt ccgaataaccg cgacgggatt tttgatttca acgtcgggta tatcgccagt 720  
 gcgggttttg ctttggtttt ccttgcaactg ggcgcggttg tgcaatacgg caacggcgaa 780  
 gcagtgcaga tggcgggcgg caaatatata gggcaattga tcaatatgta cgccgttacc 840  
 atcggcggct ggtcgcgccc gctggtggcg tttatcgctg ttgcctgtat gtacggcacg 900  
 acgattaccg ttgtggacgg ctatgccggt gccattgccg aaccggtgcg cctgctgcgc 960  
 ggaaaagaca aaacgggcaa cgccgaattc tttgcctgga atatttgggt ggcgggcgac 1020  
 ggtttggcgg tgattttctg gtttgacggc gtaatggcga atctgctcaa atttgcatg 1080  
 attgccgctt ttgtgtccgc ccctgtgttt gcctggctga attaccgttt ggtcaaagg 1140  
 gatgaaaaac acaaactcac atcaggtatg aatgcccttg cattggcagg cttgatttat 1200

ctgaccgggtt ttaccgtttt gttcttattg aatttggcgg gaatgttcaa atga

1254

<210> 482

<211> 417

<212> PRT

<213> Neisseria meningitidis

<400> 482

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			20					25					30		
Ile	Ala	Ser	Thr	Gln	Ala	Gly	Ala	Leu	Tyr	Gly	Trp	Gln	Ile	Ala	Leu
			35					40					45		
Ile	Ile	Ile	Leu	Thr	Asn	Leu	Phe	Lys	Tyr	Pro	Phe	Phe	Arg	Phe	Ser
			50				55				60				
Ala	His	Tyr	Thr	Leu	Asp	Thr	Gly	Lys	Ser	Leu	Ile	Glu	Gly	Tyr	Ala
65					70					75					80
Glu	Lys	Ser	Arg	Val	Tyr	Leu	Trp	Val	Phe	Leu	Ile	Leu	Cys	Ile	Leu
				85					90					95	
Ser	Ala	Thr	Ile	Asn	Ala	Gly	Ala	Val	Ala	Ile	Val	Thr	Ala	Ala	Ile
				100					105					110	
Val	Lys	Met	Ala	Ile	Pro	Ser	Leu	Met	Phe	Asp	Ala	Gly	Thr	Val	Ala
			115					120					125		
Ala	Leu	Ile	Met	Ala	Ser	Cys	Leu	Ile	Ile	Leu	Val	Ser	Gly	Arg	Tyr
			130				135						140		
Arg	Ala	Leu	Asp	Arg	Val	Ser	Lys	Ile	Ile	Ile	Val	Thr	Leu	Ser	Ile
145					150					155					160
Ala	Thr	Leu	Ala	Ala	Ala	Gly	Ile	Ala	Met	Ser	Arg	Gly	Met	Gln	Met
				165					170					175	
Gln	Ser	Asp	Phe	Ile	Glu	Pro	Thr	Pro	Trp	Thr	Leu	Ala	Gly	Leu	Gly
				180					185					190	
Phe	Leu	Ile	Ala	Leu	Met	Gly	Trp	Met	Pro	Ala	Pro	Ile	Glu	Ile	Ser
			195				200						205		
Ala	Ile	Asn	Ser	Leu	Trp	Val	Thr	Glu	Lys	Gln	Arg	Ile	Asn	Pro	Ser
			210				215						220		
Glu	Tyr	Arg	Asp	Gly	Ile	Phe	Asp	Phe	Asn	Val	Gly	Tyr	Ile	Ala	Ser
225					230					235				240	
Ala	Val	Leu	Ala	Leu	Val	Phe	Leu	Ala	Leu	Gly	Ala	Phe	Val	Gln	Tyr
				245					250					255	

Gly Asn Gly Glu Ala Val Gln Met Ala Gly Gly Lys Tyr Ile Gly Gln  
                   260                                  265                                  270  
 Leu Ile Asn Met Tyr Ala Val Thr Ile Gly Gly Trp Ser Arg Pro Leu  
                   275                                  280                                  285  
 Val Ala Phe Ile Ala Phe Ala Cys Met Tyr Gly Thr Thr Ile Thr Val  
                   290                                  295                                  300  
 Val Asp Gly Tyr Ala Arg Ala Ile Ala Glu Pro Val Arg Leu Leu Arg  
 305                                  310                                  315                                  320  
 Gly Lys Asp Lys Thr Gly Asn Ala Glu Phe Phe Ala Trp Asn Ile Trp  
                                   325                                  330                                  335  
 Val Ala Gly Ser Gly Leu Ala Val Ile Phe Trp Phe Asp Gly Val Met  
                                   340                                  345                                  350  
 Ala Asn Leu Leu Lys Phe Ala Met Ile Ala Ala Phe Val Ser Ala Pro  
                   355                                  360                                  365  
 Val Phe Ala Trp Leu Asn Tyr Arg Leu Val Lys Gly Asp Glu Lys His  
                   370                                  375                                  380  
 Lys Leu Thr Ser Gly Met Asn Ala Leu Ala Leu Ala Gly Leu Ile Tyr  
 385                                  390                                  395                                  400  
 Leu Thr Gly Phe Thr Val Leu Phe Leu Leu Asn Leu Ala Gly Met Phe  
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Lys

<210> 483  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 483  
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8

<210> 484  
 <211> 269  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 484  
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20					25					30						
Ala	Ile	Val	Lys	Met	Ala	Ile	Pro	Ser	Leu	Met	Phe	Asp	Ala	Gly	Thr	
35					40					45						
Val	Ala	Ala	Leu	Ile	Met	Ala	Ser	Cys	Leu	Ile	Ile	Leu	Val	Ser	Gly	
50					55					60						
Arg	Tyr	Arg	Ala	Leu	Asp	Arg	Val	Ser	Lys	Ile	Ile	Ile	Val	Thr	Leu	
65					70					75					80	
Ser	Ile	Ala	Thr	Leu	Ala	Ala	Ala	Gly	Ile	Ala	Met	Ser	Arg	Gly	Met	
85					90					95						
Gln	Met	Gln	Pro	Asp	Phe	Ile	Glu	Pro	Thr	Pro	Trp	Thr	Leu	Ala	Gly	
100					105					110						
Leu	Gly	Phe	Leu	Ile	Ala	Leu	Met	Gly	Trp	Met	Pro	Ala	Pro	Ile	Glu	
115					120					125						
Ile	Ser	Ala	Ile	Asn	Ser	Leu	Trp	Val	Thr	Glu	Lys	Gln	Arg	Ile	Asn	
130					135					140						
Pro	Ser	Glu	Tyr	Arg	Asp	Gly	Ile	Phe	Asp	Phe	Asn	Val	Gly	Tyr	Ile	
145					150					155					160	
Ala	Ser	Ala	Val	Leu	Ala	Leu	Val	Phe	Leu	Ala	Leu	Gly	Ala	Phe	Val	
165					170					175						
Gln	Tyr	Gly	Asn	Gly	Glu	Ala	Val	Gln	Met	Gly	Gly	Gly	Lys	Tyr	Ile	
180					185					190						
Gly	Gln	Leu	Ile	Asn	Met	Tyr	Ala	Val	Thr	Ile	Gly	Gly	Gly	Ser	Arg	
195					200					205						
Pro	Leu	Val	Ala	Phe	Ile	Ala	Phe	Ala	Cys	Met	Tyr	Gly	Ala	Ala	Ser	
210					215					220						
Thr	Val	Val	Asp	Gly	Tyr	Ala	Arg	Ala	Ile	Ala	Glu	Pro	Val	Arg	Leu	
225					230					235					240	
Leu	Arg	Gly	Lys	Asp	Lys	Thr	Ala	Arg	Pro	Ile	Val	Leu	Leu	Glu	Lys	
245					250					255						
Leu	Gly	Gly	Arg	His	Arg	Phe	Gly	Arg	Asp	Phe	Leu	Val				
260					265											

<210> 485  
 <211> 1014  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 485	
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atgtttgatg ccggcacggt tgccgccttg attatggcat cctgcctgat tattttggtg	180

agcggacgtt	accgcgcttt	ggatcgtgtt	tccaaaatca	tcattgttac	tttgagcatc	240
gccacgcttg	cgcgcgcgg	catcgctatg	tcgcgcggta	tgcatatgca	gcccgatatt	300
atcgagccga	caccgtggac	gcttgccggg	ttgggcttcc	tgatcgcgct	gatgggctgg	360
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atcaatcctt	ctgaataaccg	cgacgggatt	ttcgatttca	acgtcggtta	tatcgccagt	480
gcggttttgg	ctttggtttt	ccttgcaactg	ggcgcgtttg	tgcaatacgg	caacggcgaa	540
gcagtgcaga	tggcggggcg	caaataatc	gggcaattga	ttaatatgta	tgccgtaacc	600
atcgccgggt	ggtctcgctc	gctgggtggcg	tttatcgcg	ttgcctgtat	gtacggcacg	660
acgattaccg	ttgtggacgg	ttatgcgcgt	gccattgccg	aacccgtgcg	cctgctgcgc	720
ggcagggata	aaaccggcaa	cgccgagttg	tttgccgtga	atatttgggt	ggcggggcgc	780
ggtttggcgg	tgattttctg	gtttgacggc	gcaatggcgg	aactgctcaa	atttgcgatg	840
attgccgcct	ttgtgtccgc	ccctgtgttc	gcctggctca	actaccgcct	cgtcaaaggg	900
gacaaacgcc	acaggcttac	cgccggtatg	aacgcccttg	ccattgtcgg	cctgctctac	960
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<210> 486  
 <211> 337  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 486

Lys	Lys	Ser	Cys	Val	Tyr	Leu	Trp	Val	Phe	Leu	Ile	Leu	Cys	Ile	Ala	1	5	10	15
Ser	Ala	Thr	Ile	Asn	Ala	Gly	Ala	Val	Ala	Ile	Val	Thr	Ala	Ala	Ile	20	25	30	
Val	Lys	Met	Ala	Ile	Pro	Ser	Leu	Met	Phe	Asp	Ala	Gly	Thr	Val	Ala	35	40	45	
Ala	Leu	Ile	Met	Ala	Ser	Cys	Leu	Ile	Ile	Leu	Val	Ser	Gly	Arg	Tyr	50	55	60	
Arg	Ala	Leu	Asp	Arg	Val	Ser	Lys	Ile	Ile	Ile	Val	Thr	Leu	Ser	Ile	65	70	75	80
Ala	Thr	Leu	Ala	Ala	Ala	Gly	Ile	Ala	Met	Ser	Arg	Gly	Met	Gln	Met	85	90	95	
Gln	Pro	Asp	Phe	Ile	Glu	Pro	Thr	Pro	Trp	Thr	Leu	Ala	Gly	Leu	Gly	100	105	110	
Phe	Leu	Ile	Ala	Leu	Met	Gly	Trp	Met	Pro	Ala	Pro	Ile	Glu	Ile	Ser	115	120	125	
Ala	Ile	Asn	Ser	Leu	Trp	Val	Thr	Glu	Lys	Gln	Arg	Ile	Asn	Pro	Ser	130	135	140	
Glu	Tyr	Arg	Asp	Gly	Ile	Phe	Asp	Phe	Asn	Val	Gly	Tyr	Ile	Ala	Ser	145	150	155	160
Ala	Val	Leu	Ala	Leu	Val	Phe	Leu	Ala	Leu	Gly	Ala	Phe	Val	Gln	Tyr	165	170	175	
Gly	Asn	Gly	Glu	Ala	Val	Gln	Met	Ala	Gly	Gly	Lys	Tyr	Ile	Gly	Gln	180	185	190	

Leu Ile Asn Met Tyr Ala Val Thr Ile Gly Gly Trp Ser Arg Pro Leu  
 195 200 205  
 Val Ala Phe Ile Ala Phe Ala Cys Met Tyr Gly Thr Thr Ile Thr Val  
 210 215 220  
 Val Asp Gly Tyr Ala Arg Ala Ile Ala Glu Pro Val Arg Leu Leu Arg  
 225 230 235 240  
 Gly Arg Asp Lys Thr Gly Asn Ala Glu Leu Phe Ala Trp Asn Ile Trp  
 245 250 255  
 Val Ala Gly Ser Gly Leu Ala Val Ile Phe Trp Phe Asp Gly Ala Met  
 260 265 270  
 Ala Glu Leu Leu Lys Phe Ala Met Ile Ala Ala Phe Val Ser Ala Pro  
 275 280 285  
 Val Phe Ala Trp Leu Asn Tyr Arg Leu Val Lys Gly Asp Lys Arg His  
 290 295 300  
 Arg Leu Thr Ala Gly Met Asn Ala Leu Ala Ile Val Gly Leu Leu Tyr  
 305 310 315 320  
 Leu Ala Gly Phe Ala Val Leu Phe Leu Leu Asn Leu Thr Gly Leu Leu  
 325 330 335

Ala

<210> 487  
 <211> 309  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 487  
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 caggaaaaga aaggggaaaa acaggcggag ctgcctgaaa tcaaagacgg tatgcccgat 180  
 tttcccgaac ttgccctgat gcttttccac gccgtcaaaa cggcagtgta ttggctgttt 240  
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 gttccgcct 309

<210> 488  
 <211> 103  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 488  
 Leu Arg Glu Thr Ala Tyr Val Leu Asp Ser Phe Asp Arg Tyr Phe Val  
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 Val Ala Leu Ala Gly Leu Phe Phe Val Arg Ala Gln Ser Glu Arg Glu  
 20 25 30  
 Trp Met Arg Glu Val Ser Ala Trp Gln Glu Lys Lys Gly Glu Lys Gln



Ala Glu Leu Pro Glu Ile Lys Asp Gly Met Pro Asp Phe Pro Glu Leu  
50 55 60

Ala Leu Met Leu Phe His Ala Val Lys Thr Ala Val Tyr Trp Leu Phe  
65 70 75 80

Val Gly Val Val Arg Phe Cys Arg Asn Tyr Leu Ala His Glu Ser Glu  
85 90 95

Pro Asp Arg Pro Val Pro Pro  
100

<210> 489  
<211> 3045  
<212> DNA  
<213> Neisseria meningitidis

<400> 489  
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gaaaaacagg cggagctgcc tgaaatcaaa gacggatgac ccgattttcc cgaacttgcc 180  
ctgatgcttt tccatgccgt caaaacggca gtgtattggc tgtttgtcgg tgcgtccgt 240  
ttctgccgaa actatctggc gcacgaatcc gaacccggca ggcccgttcc gcctgcttct 300  
gcaaaccgtg cggatgttcc gaccgcatcc gacggatatt cagacagtgg aaacgggacg 360  
gaagaagcgg aaacgggaaga agcagaagct gcggaggaag aggctgccga tacggaagac 420  
attgcaactg ccgtaatcga caaccgccgc atcccattcg accggagtat tgctgaaggg 480  
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gaagaagcaa cgcgtgcttt aaacagcgcg gctttaaggg aaacgaaaaa acgctatatc 600  
gatgcatttg agaaaaacga aacagcggtc cccaaagtcc gcgtgtccga taccctgatg 660  
gaagggctgc agattatcgg tttggacgac cctgtgcttc aacgcacgta tccccatatg 720  
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caagggcagt ccgtttcaga cggcacggcc gtccgcgatg cccgccgccg cgtttccgtc 960  
aatttgaaag aaccgaacaa ggcaacgggt tctgcggagg cgcgaatttc tgcctgatt 1020  
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gttttcacgg aaaccgtttc gtctgtggga tacggcggtc cggtttatga tgaaactgcc 1140  
gatatacata ttgaagaacc tgccgcgccc gatgcttggg tggctgaacc acccgaagtg 1200  
ccgaaagtcc ccatgaccgc aatcgatatt cagccgccgc ctcccgtatc ggaaatctac 1260  
aaccgtacct atgaaccgcc gtcaggattc gagcagggtc aacgcagccg cattgccgag 1320  
accgaccatc ttgccgatga tgttttgaat ggaggttggc aggaggaaac cgcgcgtatt 1380  
gcggatgacg gcagtgaagg tgcggcagag cggtaagcgc ggcaatatct gtcggaaacc 1440  
gaagcgttcg ggcattgacg tcaggcgggt tgtccgtttg aaaatgtgcc gtctgaacgc 1500  
ccgtcctgcc gggatcggga tacggaagcg gatgaagggg cgttcccatc tgaagaaacc 1560  
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gcggagttca aagtcaaggt caaggttgct gattcttatt ccggccccgt aattacgcgt 1740  
tatgaaatcg aaccgatgt cggcgtgcgc ggcaattccg ttctgaatct ggaaaaagat 1800  
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<213> *Neisseria meningitidis*

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Ser	Ala	Trp	Gln	Glu	Lys	Lys	Gly	Glu	Lys	Gln	Ala	Glu	Leu	Pro	Glu	35	40	45	
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His	Ala	Val	Lys	Thr	Ala	Val	Tyr	Trp	Leu	Phe	Val	Gly	Val	Val	Arg	65	70	75	80
Phe	Cys	Arg	Asn	Tyr	Leu	Ala	His	Glu	Ser	Glu	Pro	Asp	Arg	Pro	Val	85	90	95	
Pro	Pro	Ala	Ser	Ala	Asn	Arg	Ala	Asp	Val	Pro	Thr	Ala	Ser	Asp	Gly	100	105	110	
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Glu	Ala	Ala	Glu	Glu	Glu	Ala	Ala	Asp	Thr	Glu	Asp	Ile	Ala	Thr	Ala	130	135	140	
Val	Ile	Asp	Asn	Arg	Arg	Ile	Pro	Phe	Asp	Arg	Ser	Ile	Ala	Glu	Gly	145	150	155	160
Leu	Met	Pro	Ser	Glu	Ser	Glu	Ile	Ser	Pro	Val	Arg	Pro	Val	Phe	Lys	165	170	175	
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Ser	Glu	Gly	Ala	Ala	Glu	Arg	Ser	Ser	Gly	Gln	Tyr	Leu	Ser	Glu	Thr	
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Thr	Thr	Asp	Leu	Leu	Leu	Pro	Pro	Leu	Phe	Asn	Pro	Glu	Ala	Thr	Gln	530	535	540
Thr	Glu	Glu	Glu	Leu	Leu	Glu	Asn	Ser	Ile	Thr	Ile	Glu	Glu	Lys	Leu	545	550	555
Ala	Glu	Phe	Lys	Val	Lys	Val	Lys	Val	Val	Asp	Ser	Tyr	Ser	Gly	Pro	565	570	575
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Ser	Ile	Arg	Val	Val	Glu	Thr	Ile	Pro	Gly	Lys	Thr	Cys	Met	Gly	Leu	610	615	620
Glu	Leu	Pro	Asn	Pro	Lys	Arg	Gln	Met	Ile	Arg	Leu	Ser	Glu	Ile	Phe	625	630	635
Asn	Ser	Pro	Glu	Phe	Ala	Glu	Ser	Lys	Ser	Lys	Leu	Thr	Leu	Ala	Leu	645	650	655
Gly	Gln	Asp	Ile	Thr	Gly	Gln	Pro	Val	Val	Thr	Asp	Leu	Gly	Lys	Ala	660	665	670
Pro	His	Leu	Leu	Val	Ala	Gly	Thr	Thr	Gly	Ser	Gly	Lys	Ser	Val	Gly	675	680	685
Val	Asn	Ala	Met	Ile	Leu	Ser	Met	Leu	Phe	Lys	Ala	Ala	Pro	Glu	Asp	690	695	700
Val	Arg	Met	Ile	Met	Ile	Asp	Pro	Lys	Met	Leu	Glu	Leu	Ser	Ile	Tyr	705	710	715
Glu	Gly	Ile	Pro	His	Leu	Leu	Ala	Pro	Val	Val	Thr	Asp	Met	Lys	Leu	725	730	735
Ala	Ala	Asn	Ala	Leu	Asn	Trp	Cys	Val	Asn	Glu	Met	Glu	Lys	Arg	Tyr	740	745	750
Arg	Leu	Met	Ser	Phe	Met	Gly	Val	Arg	Asn	Leu	Ala	Gly	Phe	Asn	Gln	755	760	765
Lys	Ile	Ala	Glu	Ala	Ala	Ala	Arg	Gly	Glu	Lys	Ile	Gly	Asn	Pro	Phe	770	775	780

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 Val Val Val Val Asp Glu Phe Ala Asp Leu Met Met Thr Ala Gly Lys  
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 Lys Ile Glu Glu Leu Ile Ala Arg Leu Ala Gln Lys Ala Arg Ala Ala  
 820 825 830  
 Gly Ile His Leu Ile Leu Ala Thr Gln Arg Pro Ser Val Asp Val Ile  
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 Thr Gly Leu Ile Lys Ala Asn Ile Pro Thr Arg Ile Ala Phe Gln Val  
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 Ser Ser Lys Ile Asp Ser Arg Thr Ile Leu Asp Gln Met Gly Ala Glu  
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 Tyr Pro Gln Arg Val His Gly Ala Phe Ala Ser Asp Glu Glu Val His  
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 Arg Val Val Glu Tyr Leu Lys Gln Phe Gly Glu Pro Asp Tyr Val Asp  
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 Ser Gly Asp Asp Glu Thr Asp Pro Met Tyr Asp Glu Ala Val Ser Val  
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 965 970 975  
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35 40 45

Ile Lys Asp Gly Met Pro Asp Phe Pro Glu Leu Ala Leu Met Leu Phe  
50 55 60

His Ala Val Lys Thr Ala Val Tyr Trp Leu Phe Val Gly Val Val Arg  
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Phe Cys Arg Asn Tyr Leu Ala His Glu Ser Glu Pro Asp Arg Pro Val  
85 90 95

Pro Pro Ala Ser Ala Asn Arg Ala Asp Val Pro Thr Ala Ser Asp Gly  
100 105 110

Tyr Ser Asp Ser Gly Asn Gly Thr Glu Glu Ala Glu Thr Glu Glu Ala  
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Glu Ala Ala Glu Glu Glu Ala Ala Asp Thr Glu Asp Ile Ala Thr Ala  
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Phe	Asp	Ala	Asp	Lys	Glu	Ala	Phe	Ser	Glu	Ser	Ala	Asp	Tyr	Gly	Phe	245	250	255	
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Val	Pro	Lys	Val	Pro	Met	Pro	Ala	Xaa	Asp	Ile	Pro	Pro	Pro	Pro	Pro	405	410	415	
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Val	Leu	Asn	Gly	Gly	Trp	Gln	Glu	Glu	Thr	Ala	Ala	Ile	Ala	Asn	Asp	450	455	460
Gly	Ser	Glu	Gly	Val	Ala	Glu	Arg	Ser	Ser	Gly	Gln	Tyr	Leu	Ser	Glu	465	470	475
Thr	Glu	Ala	Phe	Gly	His	Asp	Ser	Gln	Ala	Val	Cys	Pro	Phe	Glu	Asn	485	490	495
Val	Pro	Ser	Glu	Arg	Pro	Ser	Arg	Arg	Ala	Xaa	Asp	Thr	Glu	Ala	Asp	500	505	510
Glu	Gly	Ala	Phe	Gln	Ser	Glu	Glu	Thr	Gly	Ala	Val	Ser	Glu	His	Leu	515	520	525
Pro	Thr	Thr	Asp	Leu	Leu	Leu	Pro	Pro	Leu	Phe	Asn	Pro	Gly	Ala	Thr	530	535	540
Gln	Thr	Glu	Glu	Xaa	Leu	Leu	Xaa	Asn	Ser	Ile	Thr	Ile	Glu	Glu	Lys	545	550	555
Xaa	Ala	Glu	Phe	Lys	Val	Lys	Val	Lys	Val	Val	Asp	Ser	Tyr	Ser	Gly	565	570	575
Pro	Val	Ile	Thr	Arg	Tyr	Glu	Ile	Glu	Pro	Asp	Val	Gly	Val	Arg	Gly	580	585	590
Asn	Ser	Val	Leu	Asn	Leu	Glu	Lys	Xaa	Leu	Ala	Arg	Ser	Leu	Gly	Val	595	600	605
Ala	Ser	Ile	Arg	Val	Val	Glu	Thr	Ile	Leu	Gly	Lys	Thr	Cys	Met	Gly	610	615	620
Leu	Glu	Leu	Pro	Asn	Pro	Lys	Arg	Gln	Met	Ile	Arg	Leu	Ser	Glu	Ile	625	630	635
Phe	Asn	Ser	Pro	Glu	Phe	Ala	Glu	Ser	Lys	Ser	Lys	Leu	Thr	Leu	Ala	645	650	655
Leu	Gly	Gln	Asp	Ile	Thr	Gly	Gln	Pro	Val	Val	Thr	Asp	Leu	Gly	Lys	660	665	670
Ala	Pro	His	Leu	Leu	Val	Ala	Gly	Thr	Thr	Gly	Ser	Gly	Lys	Ser	Val	675	680	685
Gly	Val	Asn	Ala	Met	Ile	Leu	Ser	Met	Leu	Phe	Lys	Ala	Ala	Pro	Glu	690	695	700
Asp	Val	Arg	Met	Ile	Met	Ile	Asp	Pro	Lys	Met	Leu	Glu	Leu	Ser	Ile	705	710	715
Tyr	Glu	Gly	Ile	Pro	His	Leu	Leu	Ala	Pro	Val	Val	Thr	Asp	Met	Lys	725	730	735
Leu	Ala	Ala	Asn	Ala	Leu	Asn	Trp	Cys	Val	Asn	Glu	Met	Glu	Lys	Arg	740	745	750

Tyr	Arg	Leu	Met	Ser	Phe	Met	Gly	Val	Arg	Asn	Leu	Ala	Gly	Xaa	Asn	
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Gln	Lys	Ile	Ala	Glu	Ala	Ala	Ala	Arg	Gly	Glu	Lys	Ile	Gly	Asn	Pro	
		770					775					780				
Phe	Ser	Leu	Thr	Pro	Asp	Asn	Pro	Glu	Pro	Leu	Xaa	Lys	Leu	Pro	Phe	
		785				790				795					800	
Ile	Val	Val	Val	Val	Asp	Glu	Phe	Ala	Asp	Leu	Met	Met	Thr	Ala	Gly	
				805					810					815		
Lys	Lys	Ile	Glu	Glu	Leu	Ile	Ala	Arg	Leu	Ala	Gln	Lys	Ala	Arg	Ala	
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Ala	Gly	Ile	His	Leu	Ile	Leu	Ala	Thr	Gln	Arg	Pro	Ser	Val	Asp	Val	
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Ile	Thr	Gly	Leu	Ile	Lys	Ala	Asn	Ile	Pro	Thr	Arg	Ile	Ala	Phe	Gln	
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Val	Ser	Ser	Lys	Ile	Asp	Ser	Arg	Thr	Ile	Leu	Asp	Gln	Met	Gly	Ala	
		865			870					875					880	
Glu	Asn	Leu	Leu	Gly	Gln	Gly	Asp	Met	Leu	Phe	Leu	Pro	Pro	Gly	Thr	
			885					890						895		
Ala	Tyr	Pro	Gln	Arg	Val	His	Gly	Ala	Phe	Ala	Ser	Asp	Glu	Glu	Val	
			900					905					910			
His	Arg	Val	Val	Glu	Tyr	Leu	Lys	Gln	Phe	Gly	Glu	Pro	Asp	Tyr	Val	
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Asp	Asp	Xaa	Leu	Ser	Gly	Gly	Met	Ser	Asp	Asp	Leu	Leu	Gly	Ile	Ser	
		930				935					940					
Arg	Ser	Gly	Asp	Gly	Glu	Thr	Asp	Pro	Met	Tyr	Asp	Glu	Ala	Val	Ser	
		945			950					955					960	
Val	Val	Leu	Lys	Thr	Arg	Lys	Ala	Ser	Ile	Ser	Gly	Val	Gln	Arg	Ala	
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Leu	Arg	Ile	Gly	Tyr	Asn	Arg	Ala	Ala	Arg	Leu	Ile	Asp	Gln	Met	Glu	
		980					985						990			
Ala	Glu	Gly	Ile	Val	Ser	Ala	Pro	Glu	His	Asn	Gly	Asn	Arg	Thr	Ile	
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<213> Neisseria gonorrhoeae

<400> 494

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Val	Pro	Thr	Ala	Ser	Asp	Gly	Tyr	Ser	Asp	Ser	Gly	Asn	Gly	Thr	Glu
			20					25					30		
Glu	Ala	Glu	Thr	Glu	Ala	Ala	Glu	Ala	Ala	Glu	Glu	Glu	Ala	Ala	Asp
			35				40					45			
Thr	Glu	Asp	Ile	Ala	Thr	Ala	Val	Ile	Asp	Asn	Arg	Arg	Ile	Pro	Phe
	50					55					60				
Asp	Arg	Ser	Ile	Ala	Glu	Gly	Leu	Met	Gln	Ser	Glu	Ser	Lys	Thr	Ser
65					70					75					80
Pro	Val	Arg	Pro	Val	Phe	Lys	Glu	Ile	Thr	Leu	Glu	Glu	Ala	Thr	Arg
				85					90					95	
Ala	Leu	Ser	Ser	Ala	Ala	Leu	Arg	Glu	Thr	Lys	Lys	Arg	Tyr	Ile	Asp
			100					105						110	
Ala	Phe	Glu	Lys	Asn	Gly	Thr	Ala	Val	Pro	Lys	Val	Arg	Val	Ser	Asp
	115						120					125			
Thr	Pro	Met	Glu	Gly	Leu	Gln	Ile	Ile	Gly	Leu	Asp	Asp	Pro	Val	Leu
	130					135					140				
Gln	Arg	Thr	Tyr	Ser	Arg	Met	Phe	Asp	Ala	Asp	Lys	Glu	Ala	Phe	Ser
145					150					155					160
Glu	Ser	Ala	Asp	Tyr	Gly	Phe	Glu	Pro	Tyr	Phe	Glu	Lys	Gln	His	Pro
				165					170					175	
Ser	Ala	Phe	Ser	Ala	Val	Lys	Ala	Glu	Asn	Ala	Arg	Asn	Ala	Pro	Phe
			180					185					190		
Arg	Arg	His	Ala	Gly	Gln	Glu	Lys	Gly	Gln	Ala	Glu	Ala	Lys	Ser	Pro
		195					200					205			
Asp	Val	Ser	Gln	Gly	Gln	Ser	Val	Ser	Asp	Gly	Thr	Ala	Val	Arg	Asp
	210					215					220				

Ala	Arg	Arg	Arg	Val	Ser	Val	Asn	Leu	Lys	Glu	Pro	Asn	Lys	Ala	Thr	225	230	235	240
Val	Ser	Ala	Glu	Ala	Arg	Ile	Ser	Arg	Leu	Ile	Pro	Glu	Ser	Arg	Thr	245	250	255	
Val	Val	Gly	Lys	Arg	Asp	Val	Glu	Met	Pro	Ser	Glu	Thr	Glu	Asn	Val	260	265	270	
Phe	Thr	Glu	Thr	Val	Ser	Ser	Val	Gly	Tyr	Gly	Gly	Pro	Val	Tyr	Asp	275	280	285	
Glu	Ala	Ala	Asp	Ile	His	Ile	Glu	Glu	Pro	Ala	Ala	Pro	Asp	Ala	Trp	290	295	300	
Val	Val	Glu	Pro	Pro	Glu	Val	Pro	Glu	Val	Ala	Val	Pro	Glu	Ile	Asp	305	310	315	320
Ile	Leu	Pro	Pro	Pro	Pro	Val	Ser	Glu	Ile	Tyr	Asn	Arg	Thr	Tyr	Glu	325	330	335	
Pro	Pro	Ala	Gly	Phe	Glu	Gln	Ala	Gln	Arg	Ser	Arg	Ile	Ala	Glu	Thr	340	345	350	
Asp	His	Leu	Ala	Ala	Asp	Val	Leu	Asn	Gly	Gly	Trp	Gln	Glu	Glu	Thr	355	360	365	
Ala	Ala	Ile	Ala	Asp	Asp	Gly	Ser	Glu	Gly	Ala	Ala	Glu	Arg	Ser	Ser	370	375	380	
Gly	Gln	Tyr	Leu	Ser	Glu	Thr	Glu	Ala	Phe	Gly	His	Asp	Ser	Gln	Ala	385	390	395	400
Val	Cys	Pro	Phe	Glu	Asp	Val	Pro	Ser	Glu	Arg	Pro	Ser	Cys	Arg	Val	405	410	415	
Ser	Asp	Thr	Glu	Ala	Asp	Glu	Gly	Ala	Phe	Gln	Ser	Glu	Glu	Thr	Gly	420	425	430	
Ala	Val	Ser	Glu	His	Leu	Pro	Thr	Thr	Asp	Leu	Leu	Leu	Pro	Pro	Leu	435	440	445	
Phe	Asn	Pro	Glu	Ala	Thr	Gln	Thr	Glu	Glu	Glu	Leu	Leu	Glu	Asn	Ser	450	455	460	
Ile	Thr	Ile	Glu	Glu	Lys	Leu	Ala	Glu	Phe	Lys	Val	Lys	Val	Lys	Val	465	470	475	480
Val	Asp	Ser	Tyr	Ser	Gly	Pro	Val	Ile	Thr	Arg	Tyr	Glu	Ile	Glu	Pro	485	490	495	
Asp	Val	Gly	Val	Arg	Gly	Asn	Ser	Val	Leu	Asn	Leu	Glu	Lys	Asp	Leu	500	505	510	
Ala	Arg	Ser	Leu	Gly	Val	Ala	Ser	Ile	Arg	Val	Val	Glu	Thr	Ile	Pro	515	520	525	

Gly Lys Thr Cys Met Gly Leu Glu Leu Pro Asn Pro Lys Arg Gln Met  
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Ile Arg Leu Ser Glu Ile Phe Asn Ser Pro Glu Phe Ala Glu Ser Lys  
545 550 555 560

Ser Lys Leu Thr Leu Ala Leu Gly Gln Asp Ile Thr Gly Gln Pro Val  
565 570 575

Val Thr Asp Leu Gly Lys Ala Pro His Leu Leu Val Ala Gly Thr Thr  
580 585 590

Gly Ser Gly Lys Ser Val Gly Val Asn Ala Met Ile Leu Ser Met Leu  
595 600 605

Phe Lys Ala Ala Pro Glu Asp Val Arg Met Ile Met Ile Asp Pro Lys  
610 615 620

Met Leu Glu Leu Ser Ile Tyr Glu Gly Ile Thr His Leu Leu Ala Pro  
625 630 635 640

Val Val Thr Asp Met Lys Leu Ala Ala Asn Ala Leu Asn Trp Cys Val  
645 650 655

Asn Glu Met Glu Lys Arg Tyr Arg Leu Met Ser Phe Met Gly Val Arg  
660 665 670

Asn Leu Ala Gly Phe Asn Gln Lys Ile Ala Glu Ala Ala Ala Arg Gly  
675 680 685

Glu Lys Ile Gly Asn Pro Phe Ser Leu Thr Pro Asp Asp Pro Glu Pro  
690 695 700

Leu Glu Lys Leu Pro Phe Ile Val Val Val Val Asp Glu Phe Ala Asp  
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Ala Gln Lys Ala Arg Ala Ala Gly Ile His Leu Ile Leu Ala Thr Gln  
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Arg Pro Ser Val Asp Val Ile Thr Gly Leu Ile Lys Ala Asn Ile Pro  
755 760 765

Thr Arg Ile Ala Phe Gln Val Ser Ser Lys Ile Asp Ser Arg Thr Ile  
770 775 780

Leu Asp Gln Met Gly Ala Glu Asn Leu Leu Gly Gln Gly Asp Met Leu  
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Phe Leu Pro Pro Gly Thr Ala Tyr Pro Gln Arg Val His Gly Ala Phe  
805 810 815

Ala Ser Asp Glu Glu Val His Arg Val Val Glu Tyr Leu Lys Gln Phe  
820 825 830

Gly Glu Pro Asp Tyr Val Asp Asp Ile Leu Ser Gly Gly Gly Ser Glu  
835 840 845

Glu Leu Pro Gly Ile Gly Arg Ser Gly Asp Gly Glu Thr Asp Pro Met  
850 855 860

Tyr Asp Glu Ala Val Ser Val Val Leu Lys Thr Arg Lys Ala Ser Ile  
865 870 875 880

Ser Gly Val Gln Arg Ala Leu Arg Ile Gly Tyr Asn Arg Ala Ala Arg  
885 890 895

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<213> Neisseria gonorrhoeae

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 Ser Ala Trp Gln Glu Lys Lys Gly Glu Lys Gln Ala Glu Leu Pro Glu  
 35 40 45  
 Ile Lys Asp Gly Met Pro Asp Phe Pro Glu Phe Ser Leu Met Leu Phe  
 50 55 60  
 His Ala Val Lys Thr Ala Val Tyr Trp Leu Phe Val Gly Val Val Arg  
 65 70 75 80  
 Phe Cys Arg Asn Tyr Leu Ala His Glu Ser Glu Pro Asp Arg Pro Val  
 85 90 95  
 Pro Pro Ala Ser Ala Asn Arg Ala Asp Val Pro Thr Ala Ser Asp Gly  
 100 105 110  
 Tyr Ser Asp Ser Gly Asn Gly Thr Glu Glu Ala Glu Thr Glu Ala Ala  
 115 120 125  
 Glu Ala Ala Glu Glu Glu Ala Ala Asp Thr Glu Asp Ile Ala Thr Ala  
 130 135 140  
 Val Ile Asp Asn Arg Arg Ile Pro Phe Asp Arg Ser Ile Ala Glu Gly  
 145 150 155 160

Leu Met Gln Ser Glu Ser Lys Thr Ser Pro Val Arg Pro Val Phe Lys  
 165 170 175  
 Glu Ile Thr Leu Glu Glu Ala Thr Arg Ala Leu Ser Ser Ala Ala Leu  
 180 185 190  
 Arg Glu Thr Lys Lys Arg Tyr Ile Asp Ala Phe Glu Lys Asn Gly Thr  
 195 200 205  
 Ala Val Pro Lys Val Arg Val Ser Asp Thr Pro Met Glu Gly Leu Gln  
 210 215 220  
 Ile Ile Gly Leu Asp Asp Pro Val Leu Gln Arg Thr Tyr Ser Arg Met  
 225 230 235 240  
 Phe Asp Ala Asp Lys Glu Ala Phe Ser Glu Ser Ala Asp Tyr Gly Phe  
 245 250 255  
 Glu Pro Tyr Phe Glu Lys Gln His Pro Ser Ala Phe Ser Ala Val Lys  
 260 265 270  
 Ala Glu Asn Ala Arg Asn Ala Pro Phe Arg Arg His Ala Gly Gln Glu  
 275 280 285  
 Lys Gly Gln Ala Glu Ala Lys Ser Pro Asp Val Ser Gln Gly Gln Ser  
 290 295 300  
 Val Ser Asp Gly Thr Ala Val Arg Asp Ala Arg Arg Arg Val Ser Val  
 305 310 315 320  
 Asn Leu Lys Glu Pro Asn Lys Ala Thr Val Ser Ala Glu Ala Arg Ile  
 325 330 335  
 Ser Arg Leu Ile Pro Glu Ser Arg Thr Val Val Gly Lys Arg Asp Val  
 340 345 350  
 Glu Met Pro Ser Glu Thr Glu Asn Val Phe Thr Glu Thr Val Ser Ser  
 355 360 365  
 Val Gly Tyr Gly Gly Pro Val Tyr Asp Glu Ala Ala Asp Ile His Ile  
 370 375 380  
 Glu Glu Pro Ala Ala Pro Asp Ala Trp Val Val Glu Pro Pro Glu Val  
 385 390 395 400  
 Pro Glu Val Ala Val Pro Glu Ile Asp Ile Leu Pro Pro Pro Pro Val  
 405 410 415  
 Ser Glu Ile Tyr Asn Arg Thr Tyr Glu Pro Pro Ala Gly Phe Glu Gln  
 420 425 430  
 Ala Gln Arg Ser Arg Ile Ala Glu Thr Asp His Leu Ala Ala Asp Val  
 435 440 445  
 Leu Asn Gly Gly Trp Gln Glu Glu Thr Ala Ala Ile Ala Asp Asp Gly  
 450 455 460

Ser Glu Gly Ala Ala Glu Arg Ser Ser Gly Gln Tyr Leu Ser Glu Thr  
 465 470 475 480  
 Glu Ala Phe Gly His Asp Ser Gln Ala Val Cys Pro Phe Glu Asp Val  
 485 490 495  
 Pro Ser Glu Arg Pro Ser Cys Arg Val Ser Asp Thr Glu Ala Asp Glu  
 500 505 510  
 Gly Ala Phe Gln Ser Glu Glu Thr Gly Ala Val Ser Glu His Leu Pro  
 515 520 525  
 Thr Thr Asp Leu Leu Leu Pro Pro Leu Phe Asn Pro Glu Ala Thr Gln  
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 Thr Glu Glu Glu Leu Leu Glu Asn Ser Ile Thr Ile Glu Glu Lys Leu  
 545 550 555 560  
 Ala Glu Phe Lys Val Lys Val Lys Val Val Asp Ser Tyr Ser Gly Pro  
 565 570 575  
 Val Ile Thr Arg Tyr Glu Ile Glu Pro Asp Val Gly Val Arg Gly Asn  
 580 585 590  
 Ser Val Leu Asn Leu Glu Lys Asp Leu Ala Arg Ser Leu Gly Val Ala  
 595 600 605  
 Ser Ile Arg Val Val Glu Thr Ile Pro Gly Lys Thr Cys Met Gly Leu  
 610 615 620  
 Glu Leu Pro Asn Pro Lys Arg Gln Met Ile Arg Leu Ser Glu Ile Phe  
 625 630 635 640  
 Asn Ser Pro Glu Phe Ala Glu Ser Lys Ser Lys Leu Thr Leu Ala Leu  
 645 650 655  
 Gly Gln Asp Ile Thr Gly Gln Pro Val Val Thr Asp Leu Gly Lys Ala  
 660 665 670  
 Pro His Leu Leu Val Ala Gly Thr Thr Gly Ser Gly Lys Ser Val Gly  
 675 680 685  
 Val Asn Ala Met Ile Leu Ser Met Leu Phe Lys Ala Ala Pro Glu Asp  
 690 695 700  
 Val Arg Met Ile Met Ile Asp Pro Lys Met Leu Glu Leu Ser Ile Tyr  
 705 710 715 720  
 Glu Gly Ile Thr His Leu Leu Ala Pro Val Val Thr Asp Met Lys Leu  
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 Ala Ala Asn Ala Leu Asn Trp Cys Val Asn Glu Met Glu Lys Arg Tyr  
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 Arg Leu Met Ser Phe Met Gly Val Arg Asn Leu Ala Gly Phe Asn Gln  
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Lys Ile Ala Glu Ala Ala Ala Arg Gly Glu Lys Ile Gly Asn Pro Phe  
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Ser Leu Thr Pro Asp Asp Pro Glu Pro Leu Glu Lys Leu Pro Phe Ile  
 785 790 795 800

Val Val Val Val Asp Glu Phe Ala Asp Leu Met Met Thr Ala Gly Lys  
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Lys Ile Glu Glu Leu Ile Ala Arg Leu Ala Gln Lys Ala Arg Ala Ala  
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Gly Ile His Leu Ile Leu Ala Thr Gln Arg Pro Ser Val Asp Val Ile  
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Thr Gly Leu Ile Lys Ala Asn Ile Pro Thr Arg Ile Ala Phe Gln Val  
 850 855 860

Ser Ser Lys Ile Asp Ser Arg Thr Ile Leu Asp Gln Met Gly Ala Glu  
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Asn Leu Leu Gly Gln Gly Asp Met Leu Phe Leu Pro Pro Gly Thr Ala  
 885 890 895

Tyr Pro Gln Arg Val His Gly Ala Phe Ala Ser Asp Glu Glu Val His  
 900 905 910

Arg Val Val Glu Tyr Leu Lys Gln Phe Gly Glu Pro Asp Tyr Val Asp  
 915 920 925

Asp Ile Leu Ser Gly Gly Gly Ser Glu Glu Leu Pro Gly Ile Gly Arg  
 930 935 940

Ser Gly Asp Gly Glu Thr Asp Pro Met Tyr Asp Glu Ala Val Ser Val  
 945 950 955 960

Val Leu Lys Thr Arg Lys Ala Ser Ile Ser Gly Val Gln Arg Ala Leu  
 965 970 975

Arg Ile Gly Tyr Asn Arg Ala Ala Arg Leu Ile Asp Gln Met Glu Ala  
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Val Pro Leu Asp Asn Ala  
 1010

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 <213> Neisseria meningitidis

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gggcgtgatc gccatcgatg ccgtgttggc attggtcggc ttctgggtca ttgccatcgg	180
tttgttttta atttaccaaa acgggctgac cctgcttttt gaagccgtgg aagacggcaa	240
aatccatttt tggctcggac tgctgcctat gcacattatc atgtttgtcc ttgcactcat	300
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<220>  
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 <222> (42)..(42)  
 <223> Xaa= any amino acid

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 20 25 30  
 Asn Leu Leu Gly Arg Ala Ala Asp Gly Xaa Val Ile Ala Ile Asp Ala  
 35 40 45  
 Val Leu Ala Leu Val Gly Phe Trp Val Ile Ala Ile Gly Leu Phe Leu  
 50 55 60  
 Ile Tyr Gln Asn Gly Leu Thr Leu Leu Phe Glu Ala Val Glu Asp Gly  
 65 70 75 80  
 Lys Ile His Phe Trp Leu Gly Leu Leu Pro Met His Ile Ile Met Phe  
 85 90 95  
 Val Leu Ala Leu Ile Leu Leu Arg Val Arg Ser Met Pro Ser Gln Pro  
 100 105 110  
 Phe Trp Gln Ala Val Gly Lys Ser Leu Thr Leu Lys Gly Gly Lys  
 115 120 125

<210> 499  
 <211> 1116  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 499	-
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gggcgtgtcg ccatcgatgc cgtgttggca ttggtcggct tctgggtcat cggatgacg	180
ccgcttttgc tgggtgtgac cgcatttata agtacgttga ccgtgttgac ccgctactgg	240
cgcgacagcg aaatgtcggg ctggctatcc tgccgattgg cattgaaaca atggatacgc	300
ccggtgatgc agtttgccgt gccgtttgcc gttttgggtg ccgtcatgca gctttgggtg	360
ataccgtggg cagagctacg cagccgcgaa tacgctgaaa tcctgaagca gaagcaggaa	420
ttgtctttgg tggaggcagg cgagttcaac agtttgggca agcgcaacgg cagggtttat	480
tttgtcgaaa ccttcgatac cgaatccggc atcatgaaaa acctgttctt gcgcgaacag	540

gacaaaaacg	gcggcgacaa	catcatcttc	gccaaagaag	gtaacttctc	gctgaacgac	600
aacaaacgca	cgctcgaatt	gcgccacggc	taccgttaca	gcggcacgcc	cggacgcgcc	660
gactacaatc	aggtttcctt	ccaaaaactc	aacctgatta	tcagcaccac	gccccaaactc	720
atcgaccccc	tttcccaccg	ccgtaccatt	ccgaccgccc	aactgattgg	cagcagcaac	780
ccgcaacatc	aggcggaatt	gatgtggcgc	atctcgctga	ccgtcagcgt	cctcctactc	840
tgcttgcttg	ccgtgccgct	ttcctatttc	aaccgcgcga	gcggacatac	ctacaatatc	900
ttgattgcca	tcggtttggt	tttaattttac	caaaacgggc	tgaccctgct	ttttgaagcc	960
gtggaagacg	gcaaaatcca	tttttggctc	ggactgctgc	ctatgcacat	tatcatgttt	1020
gccgttgcac	tcatoctggt	gcgcgtccgc	agtatgccca	gccagccctt	ctggcaggcg	1080
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<210> 500  
 <211> 371  
 <212> PRT  
 <213> Neisseria meningitidis

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 20 25 30  
 Asn Leu Leu Gly Arg Ala Ala Asp Gly Arg Val Ala Ile Asp Ala Val  
 35 40 45  
 Leu Ala Leu Val Gly Phe Trp Val Ile Gly Met Thr Pro Leu Leu Leu  
 50 55 60  
 Val Leu Thr Ala Phe Ile Ser Thr Leu Thr Val Leu Thr Arg Tyr Trp  
 65 70 75 80  
 Arg Asp Ser Glu Met Ser Val Trp Leu Ser Cys Gly Leu Ala Leu Lys  
 85 90 95  
 Gln Trp Ile Arg Pro Val Met Gln Phe Ala Val Pro Phe Ala Val Leu  
 100 105 110  
 Val Ala Val Met Gln Leu Trp Val Ile Pro Trp Ala Glu Leu Arg Ser  
 115 120 125  
 Arg Glu Tyr Ala Glu Ile Leu Lys Gln Lys Gln Glu Leu Ser Leu Val  
 130 135 140  
 Glu Ala Gly Glu Phe Asn Ser Leu Gly Lys Arg Asn Gly Arg Val Tyr  
 145 150 155 160  
 Phe Val Glu Thr Phe Asp Thr Glu Ser Gly Ile Met Lys Asn Leu Phe  
 165 170 175  
 Leu Arg Glu Gln Asp Lys Asn Gly Gly Asp Asn Ile Ile Phe Ala Lys  
 180 185 190  
 Glu Gly Asn Phe Ser Leu Asn Asp Asn Lys Arg Thr Leu Glu Leu Arg  
 195 200 205

His Gly Tyr Arg Tyr Ser Gly Thr Pro Gly Arg Ala Asp Tyr Asn Gln  
 210 215 220  
 Val Ser Phe Gln Lys Leu Asn Leu Ile Ile Ser Thr Thr Pro Lys Leu  
 225 230 235 240  
 Ile Asp Pro Val Ser His Arg Arg Thr Ile Pro Thr Ala Gln Leu Ile  
 245 250 255  
 Gly Ser Ser Asn Pro Gln His Gln Ala Glu Leu Met Trp Arg Ile Ser  
 260 265 270  
 Leu Thr Val Ser Val Leu Leu Leu Cys Leu Leu Ala Val Pro Leu Ser  
 275 280 285  
 Tyr Phe Asn Pro Arg Ser Gly His Thr Tyr Asn Ile Leu Ile Ala Ile  
 290 295 300  
 Gly Leu Phe Leu Ile Tyr Gln Asn Gly Leu Thr Leu Leu Phe Glu Ala  
 305 310 315 320  
 Val Glu Asp Gly Lys Ile His Phe Trp Leu Gly Leu Leu Pro Met His  
 325 330 335  
 Ile Ile Met Phe Ala Val Ala Leu Ile Leu Leu Arg Val Arg Ser Met  
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 Pro Ser Gln Pro Phe Trp Gln Ala Val Gly Lys Ser Leu Thr Leu Lys  
 355 360 365  
 Gly Gly Lys  
 370

<210> 501  
 <211> 1116  
 <212> DNA  
 <213> Neisseria meningitidis

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<220>  
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 <223> N= Unknown

<220>  
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 <222> (127)..(127)  
 <223> N= Unknown

<220>  
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<223> N= Unknown

<220>

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<222> (192)..(192)

<223> N= Unknown

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<223> N= Unknown

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<222> (792)..(792)

<223> N= Unknown

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<222> (905)..(905)

<223> N= Unknown



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ccgcttttgc tngtgttgac cgcatttate agtacgttga ccgtgttgac ccgctactgg 240
cngnacagcg aaatgtcggg ctggntatcc tgcggattgg cattgaaaca atggatacgc 300
ccggtgatgc agtttgccgt gccgtttgcc gttttggttg ccgtcatgca gctttgggtg 360
ataccgtggg cagagctacg cagccgcgaa tacgctgaaa tcctgaagca gaagcaggaa 420
ttgtctttgg tggaggcagg cgggttcaac agtttgggca agcgcaacgg cagggtttat 480
tttgtcgaac ctttcgatac cgaatccggc atcatgaaaa acctgttcct gcgcgaacag 540
gacaaaaacg gcggcgacaa catcatcttc nccaaagaaa gtaacttctc gctgaacgac 600
aacaacgca cgctcgaatt gcgccacggc taccgttaca gcggcacgcc cggacgcgcc 660
gactacaatc aggttttcct ccnaaaactc aacctgatta tcagcaccac gcccaaactc 720
atcgaccccg tttcccaccg ccgtacnath ccnacngccc aactgattgg cagcagcaac 780
ccgcaacatc ancggaatt gatgtggcgc atctcgctga ccgtcagcgt cctcctactc 840
tgctgtttg ccgtgccgt ttcctatttc aaccgcgca gcggacatac ctacaatatc 900
ttgantgcca tcggtttggt tttaatctac caaaacgggc tgacctgct ttttgaagcc 960
gtggaagacg gcaaaatcca tttttggctc ggactgctgc ctatgcacat catcatgttc 1020
gtcatcgcaa tcgtacttct gcgcgtccgc agcatgcca gccagccctt ctggcaggcg 1080
gttggaacaa gtctgacatt gaaaggcgga aaatga 1116

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<210> 502
<211> 371
<212> PRT
<213> Neisseria meningitidis

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<220>
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<223> Xaa= any amino acid

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<220>
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<222> (41)..(41)
<223> Xaa= any amino acid

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<220>
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<223> Xaa= any amino acid

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<220>
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<223> Xaa= any amino acid

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<220>
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<223> Xaa= any amino acid

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<220>
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<223> Xaa= any amino acid

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<220>  
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 <223> Xaa= any amino acid

<220>  
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 <223> Xaa= any amino acid

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 <223> Xaa= any amino acid

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 <223> Xaa= any amino acid

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 20 25 30  
 Asn Leu Leu Gly Xaa Ala Ala Asp Xaa Arg Xaa Ala Ile Asp Ala Val  
 35 40 45  
 Leu Ala Leu Val Gly Phe Trp Val Xaa Xaa Met Thr Pro Leu Leu Leu  
 50 55 60  
 Val Leu Thr Ala Phe Ile Ser Thr Leu Thr Val Leu Thr Arg Tyr Trp  
 65 70 75 80  
 Arg Asp Ser Glu Met Ser Val Trp Xaa Ser Cys Gly Leu Ala Leu Lys  
 85 90 95  
 Gln Trp Ile Arg Pro Val Met Gln Phe Ala Val Pro Phe Ala Val Leu  
 100 105 110  
 Val Ala Val Met Gln Leu Trp Val Ile Pro Trp Ala Glu Leu Arg Ser  
 115 120 125  
 Arg Glu Tyr Ala Glu Ile Leu Lys Gln Lys Gln Glu Leu Ser Leu Val  
 130 135 140  
 Glu Ala Gly Gly Phe Asn Ser Leu Gly Lys Arg Asn Gly Arg Val Tyr  
 145 150 155 160  
 Phe Val Glu Thr Phe Asp Thr Glu Ser Gly Ile Met Lys Asn Leu Phe  
 165 170 175  
 Leu Arg Glu Gln Asp Lys Asn Gly Gly Asp Asn Ile Ile Phe Xaa Lys  
 180 185 190

Glu Ser Asn Phe Ser Leu Asn Asp Asn Lys Arg Thr Leu Glu Leu Arg  
195 200 205

His Gly Tyr Arg Tyr Ser Gly Thr Pro Gly Arg Ala Asp Tyr Asn Gln  
210 215 220

Val Ser Phe Xaa Lys Leu Asn Leu Ile Ile Ser Thr Thr Pro Lys Leu  
225 230 235 240

Ile Asp Pro Val Ser His Arg Arg Thr Xaa Pro Thr Ala Gln Leu Ile  
245 250 255

Gly Ser Ser Asn Pro Gln His Xaa Ala Glu Leu Met Trp Arg Ile Ser  
260 265 270

Leu Thr Val Ser Val Leu Leu Leu Cys Leu Leu Ala Val Pro Leu Ser  
275 280 285

Tyr Phe Asn Pro Arg Ser Gly His Thr Tyr Asn Ile Leu Xaa Ala Ile  
290 295 300

Gly Leu Phe Leu Ile Tyr Gln Asn Gly Leu Thr Leu Leu Phe Glu Ala  
305 310 315 320

Val Glu Asp Gly Lys Ile His Phe Trp Leu Gly Leu Leu Pro Met His  
325 330 335

Ile Ile Met Phe Val Ile Ala Ile Val Leu Leu Arg Val Arg Ser Met  
340 345 350

Pro Ser Gln Pro Phe Trp Gln Ala Val Gly Lys Ser Leu Thr Leu Lys  
355 360 365

Gly Gly Lys  
370

<210> 503  
<211> 8  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 503  
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<210> 504  
<211> 362  
<212> PRT  
<213> *Neisseria gonorrhoeae*

<400> 504  
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Gly Ile Phe Val Val Leu Leu Ala Val Leu Val Ser Thr Gln Ala Ile  
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Asn Leu Leu Gly Arg Ala Ala Asp Gly Arg Val Ala Ile Asp Ala Val  
 35 40 45  
 Leu Ala Leu Val Gly Phe Trp Val Ile Gly Met Thr Pro Leu Leu Leu  
 50 55 60  
 Val Leu Thr Ala Phe Ile Ser Thr Leu Thr Val Leu Thr Arg Tyr Trp  
 65 70 75 80  
 Arg Asp Ser Glu Met Ser Val Trp Leu Ser Cys Gly Leu Ala Leu Lys  
 85 90 95  
 Gln Trp Ile Arg Pro Val Met Gln Phe Ala Val Pro Phe Ala Ile Leu  
 100 105 110  
 Ile Ala Val Met Gln Leu Trp Val Ile Pro Trp Ala Glu Leu Arg Ser  
 115 120 125  
 Arg Glu Tyr Ala Glu Ile Leu Lys Gln Lys Gln Glu Leu Ser Leu Val  
 130 135 140  
 Glu Ala Gly Glu Phe Asn Asn Leu Gly Lys Arg Asn Gly Arg Val Tyr  
 145 150 155 160  
 Phe Val Glu Thr Phe Asp Thr Glu Ser Gly Ile Met Lys Asn Leu Phe  
 165 170 175  
 Leu Arg Glu Gln Asp Lys Asn Gly Gly Asp Asn Ile Ile Phe Ala Lys  
 180 185 190  
 Glu Gly Asn Phe Ser Leu Lys Asp Asn Lys Arg Thr Leu Glu Leu Arg  
 195 200 205  
 His Gly Tyr Arg Tyr Ser Gly Thr Pro Gly Arg Ala Asp Tyr Asn Gln  
 210 215 220  
 Val Ser Phe Gln Lys Leu Asn Leu Ile Ile Ser Thr Thr Pro Lys Leu  
 225 230 235 240  
 Ile Asp Pro Val Ser His Arg Arg Thr Ile Ser Thr Ala Gln Leu Ile  
 245 250 255  
 Gly Ser Ser Asn Pro Gln His Gln Ala Glu Leu Met Trp Arg Ile Ser  
 260 265 270  
 Leu Thr Val Ser Val Leu Leu Leu Cys Leu Leu Ala Val Pro Leu Ser  
 275 280 285  
 Tyr Phe Asn Pro Arg Ser Gly His Thr Tyr Asn Ile Leu Ile Ala Ile  
 290 295 300  
 Gly Leu Phe Leu Ile Tyr Gln Asn Gly Leu Thr Leu Leu Phe Glu Ala  
 305 310 315 320  
 Val Glu Asp Gly Lys Ile His Phe Trp Leu Gly Leu Leu Pro Met His  
 325 330 335

Ile Ile Met Phe Val Ile Ala Ile Val Leu Leu Arg Val Arg Ser Met  
 340 345 350

Pro Ser Gln Pro Phe Trp Gln Ala Val Gly  
 355 360

<210> 505  
 <211> 1116  
 <212> DNA  
 <213> Neisseria gonorrhoeae

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 gggcgtgtcg ccatcgatgc cgtgttgcc ttagtcggct tctgggtcat cggatatgac 180  
 ccgcttttgc tgggtgtgac cgcattcatc agcacgctga ccgtattgac ccgctactgg 240  
 cgcgacagcg aaatgtcggg ctggctatcc tgcggattgg cgttgaaaca gtggatacgc 300  
 cccgtcatgc agtttgcggt gccgtttgcc atcctgattg ccgtcatgca gctttgggtg 360  
 ataccgtggg cagagctgcg cagccgcgaa tatgccgaaa ttttgaagca gaagcaggaa 420  
 ttgtctttgg tgggaagccg cgagttcaat aacttgggca agcgcaacgg cagggtttat 480  
 ttcgtcga aa cctttgacac cgaatccggc atcatgaaaa acctgttcct gcgcgaacag 540  
 gacaaaaacg gcggcgacaa catcatcttc gccaaagaag gtaacttctc gctgaaggac 600  
 aacaaacgca cgctcgaatt gcgccacggc taccgttaca gcggcacgcc cggacgcgcc 660  
 gactacaatc aggtttcctt ccaaaaactc aacctgatta tcagcaccac gcccaaactt 720  
 atcgaccccg tttcccaccg ccgcaccatt tcgaccgcc aactgattgg cagcagcaat 780  
 ccgcaacatc aggcagaatt gatgtggcgc atctcgtgga ccgtcagcgt cctcctgctc 840  
 tgctactcgc ccgtgccgct ttcctatttc aaccgcgcga gcggacatac ctacaatatc 900  
 ttgattgcca tcggtttggt ttttaattac caaaacgggc tgaccctgct ttttgaagcc 960  
 gtggaagacg gcaaaatcca tttttggctc ggactgctgc ctatgcacat catcatgttc 1020  
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 gttggcaaaa gtctgacatt gaaaggcgga aaatga 1116

<210> 506  
 <211> 371  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 506  
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 20 25 30  
 Asn Leu Leu Gly Arg Ala Ala Asp Gly Arg Val Ala Ile Asp Ala Val  
 35 40 45  
 Leu Ala Leu Val Gly Phe Trp Val Ile Gly Met Thr Pro Leu Leu Leu  
 50 55 60  
 Val Leu Thr Ala Phe Ile Ser Thr Leu Thr Val Leu Thr Arg Tyr Trp  
 65 70 75 80  
 Arg Asp Ser Glu Met Ser Val Trp Leu Ser Cys Gly Leu Ala Leu Lys  
 85 90 95

Gln Trp Ile Arg Pro Val Met Gln Phe Ala Val Pro Phe Ala Ile Leu  
 100 105 110  
 Ile Ala Val Met Gln Leu Trp Val Ile Pro Trp Ala Glu Leu Arg Ser  
 115 120 125  
 Arg Glu Tyr Ala Glu Ile Leu Lys Gln Lys Gln Glu Leu Ser Leu Val  
 130 135 140  
 Glu Ala Gly Glu Phe Asn Asn Leu Gly Lys Arg Asn Gly Arg Val Tyr  
 145 150 155 160  
 Phe Val Glu Thr Phe Asp Thr Glu Ser Gly Ile Met Lys Asn Leu Phe  
 165 170 175  
 Leu Arg Glu Gln Asp Lys Asn Gly Gly Asp Asn Ile Ile Phe Ala Lys  
 180 185 190  
 Glu Gly Asn Phe Ser Leu Lys Asp Asn Lys Arg Thr Leu Glu Leu Arg  
 195 200 205  
 His Gly Tyr Arg Tyr Ser Gly Thr Pro Gly Arg Ala Asp Tyr Asn Gln  
 210 215 220  
 Val Ser Phe Gln Lys Leu Asn Leu Ile Ile Ser Thr Thr Pro Lys Leu  
 225 230 235 240  
 Ile Asp Pro Val Ser His Arg Arg Thr Ile Ser Thr Ala Gln Leu Ile  
 245 250 255  
 Gly Ser Ser Asn Pro Gln His Gln Ala Glu Leu Met Trp Arg Ile Ser  
 260 265 270  
 Leu Thr Val Ser Val Leu Leu Leu Cys Leu Leu Ala Val Pro Leu Ser  
 275 280 285  
 Tyr Phe Asn Pro Arg Ser Gly His Thr Tyr Asn Ile Leu Ile Ala Ile  
 290 295 300  
 Gly Leu Phe Leu Ile Tyr Gln Asn Gly Leu Thr Leu Leu Phe Glu Ala  
 305 310 315 320  
 Val Glu Asp Gly Lys Ile His Phe Trp Leu Gly Leu Leu Pro Met His  
 325 330 335  
 Ile Ile Met Phe Val Ile Ala Ile Val Leu Leu Arg Val Arg Ser Met  
 340 345 350  
 Pro Ser Gln Pro Phe Trp Gln Ala Val Gly Lys Ser Leu Thr Leu Lys  
 355 360 365  
 Gly Gly Lys  
 370

<210> 507

<211> 407

<212> DNA  
<213> *Neisseria meningitidis*

<400> 507  
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gcaggagacc ttagcgcttt taagataagg caaggcaatg ttgtaatcgc cggacacggt 120  
ttggatgcac gtgataccga ttacacacgt attctcagtt atcattccaa aatcgatgca 180  
cccgtatggg gacaagatgt tcgtgtcgtc gcgggacaaa acgatgtggc cgcaacaggt 240  
gatgcacatt cgcctattct caataatgct gctgccaata cgtcaaacia tacagccaac 300  
aacggcacac atatcccttt atttgcgatt gatacaggca aattaggagg tatgtatgcc 360  
aacaaaaatca ccttgatcag tacggtcag caagcaggca ttcgtaa 407

<210> 508  
<211> 135  
<212> PRT  
<213> *Neisseria meningitidis*

<220>  
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<222> (118)..(118)  
<223> Xaa= any amino acid

<400> 508  
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20 25 30  
Asn Val Val Ile Ala Gly His Gly Leu Asp Ala Arg Asp Thr Asp Tyr  
35 40 45  
Thr Arg Ile Leu Ser Tyr His Ser Lys Ile Asp Ala Pro Val Trp Gly  
50 55 60  
Gln Asp Val Arg Val Val Ala Gly Gln Asn Asp Val Ala Ala Thr Gly  
65 70 75 80  
Asp Ala His Ser Pro Ile Leu Asn Asn Ala Ala Ala Asn Thr Ser Asn  
85 90 95  
Asn Thr Ala Asn Asn Gly Thr His Ile Pro Leu Phe Ala Ile Asp Thr  
100 105 110  
Gly Lys Leu Gly Gly Xaa Val Cys Gln Gln Asn His Leu Asp Gln Tyr  
115 120 125  
Gly Arg Ala Ser Arg His Ser  
130 135

<210> 509  
<211> 8  
<212> DNA  
<213> *Neisseria gonorrhoeae*  
  
<220>

<221> misc\_feature  
<222> (1)..(8)  
<223> N= Unknown

<400> 509  
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8

<210> 510  
<211> 263  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 510  
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20 25 30  
Asp Ser Gly Ser Gly Ser Val Tyr Val Lys Ser Val Ser Phe Ile Pro  
35 40 45  
Thr His Ser Lys Ala Phe Cys Phe Ser Ala Leu Gly Phe Ser Leu Cys  
50 55 60  
Leu Ala Leu Gly Thr Val Asn Ile Ala Phe Ala Asp Gly Ile Ile Thr  
65 70 75 80  
Asp Lys Ala Ala Pro Lys Thr Gln Gln Ala Thr Ile Leu Gln Thr Gly  
85 90 95  
Asn Gly Ile Pro Gln Val Asn Ile Gln Thr Pro Thr Ser Ala Gly Val  
100 105 110  
Ser Val Asn Gln Tyr Ala Gln Phe Asp Val Gly Asn Arg Gly Ala Ile  
115 120 125  
Leu Asn Asn Ser Arg Ser Asn Thr Gln Thr Gln Leu Gly Gly Trp Ile  
130 135 140  
Gln Gly Asn Pro Trp Leu Thr Arg Gly Glu Ala Arg Val Val Val Asn  
145 150 155 160  
Gln Ile Asn Ser Ser His Pro Ser Gln Leu Asn Gly Tyr Ile Glu Val  
165 170 175  
Gly Gly Arg Arg Ala Glu Val Val Ile Ala Asn Pro Ala Gly Ile Ala  
180 185 190  
Val Asn Gly Gly Gly Phe Ile Asn Ala Ser Arg Ala Thr Leu Thr Thr  
195 200 205  
Gly Gln Pro Gln Tyr Gln Ala Gly Asp Phe Ser Gly Phe Lys Ile Arg  
210 215 220  
Gln Gly Asn Ala Val Ile Ala Gly His Gly Leu Asp Ala Arg Asp Thr



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<400>      512
Ser Thr Gly His  Ser Glu Gln Asn Tyr  Thr Leu Pro Arg Glu Ile Thr
1              5              10              15

Arg Asn Ile  Ser Leu Gly Ser Phe Ala  Tyr Glu Ser His Arg Lys Ala
          20              25              30

Leu Ser His  His Ala Pro Ser Gln Gly Thr Glu Leu Pro Gln Ser Asn
      35              40              45

Gly Ile Ser Leu Pro Tyr Thr Ser Asn Ser Phe Thr Pro Leu Pro Ser
      50              55              60

Ser Ser Leu Tyr Ile  Ile Asn Pro Val Asn Lys Gly Tyr Leu Val Glu
65              70              75              80

Thr Asp Pro Arg Phe Ala Asn Tyr Arg Gln Trp Leu Gly Ser Asp Tyr
          85              90              95

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Met Leu Asp Ser Leu Lys Leu Asp Pro Asn Asn Leu His Lys Arg Leu  
 100 105 110  
 Gly Asp Gly Tyr Tyr Glu Gln Arg Leu Ile Asn Glu Gln Ile Ala Glu  
 115 120 125  
 Leu Thr Gly His Arg Arg Leu Asp Gly Tyr Gln Asn Asp Glu Glu Gln  
 130 135 140  
 Phe Lys Ala Leu Met Asp Asn Gly Ala Thr Ala Ala Arg Ser Met Asn  
 145 150 155 160  
 Leu Ser Val Gly Ile Ala Leu Ser Ala Glu Gln Val Ala Gln Leu Thr  
 165 170 175  
 Ser Asp Ile Val Trp Leu Val Gln Lys Glu Val Lys Leu Pro Asp Gly  
 180 185 190  
 Gly Thr Gln Thr Val Leu Val Pro Gln Val Tyr Val Arg Val Lys Asn  
 195 200 205  
 Gly Asp Ile Asp Gly Lys Gly Ala Leu Leu Ser Gly Ser Asn Thr Gln  
 210 215 220  
 Ile Asn Val Ser Gly Ser Leu Lys Asn Ser Gly Thr Ile Ala Gly Arg  
 225 230 235 240  
 Asn Ala Leu Ile Ile Asn Thr Asp Thr Leu Asp Asn Ile Gly Gly Arg  
 245 250 255  
 Ile His Ala Gln Lys Ser Ala Val Thr Ala Thr Gln Asp Ile Asn Asn  
 260 265 270  
 Ile Gly Gly Met Leu Ser Ala Glu Gln Thr Leu Leu Leu Asn Ala Gly  
 275 280 285  
 Asn Asn Ile Asn Ser Gln Ser Thr Thr Ala Ser Ser Gln Asn Thr Gln  
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 Gly Ser Ser Thr Tyr Leu Asp Arg Met Ala Gly Ile Tyr Ile Thr Gly  
 305 310 315 320  
 Lys Glu Lys Gly Val  
 325

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 <213> *Neisseria gonorrhoeae*  
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 <222> (1)..(8)  
 <223> N= Unknown  
 <400> 513

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8

<210> 514

<211> 721

<212> PRT

<213> Neisseria gonorrhoeae

<400> 514

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Arg Ala Arg Arg Lys Gly His Asp Glu Thr Gly His Arg Glu Gln Asn  
35 40 45

Tyr Thr Leu Pro Glu Glu Ile Thr Arg Asp Ile Ser Leu Gly Ser Phe  
50 55 60

Ala Tyr Glu Ser His Ser Lys Ala Leu Ser Arg His Ala Pro Ser Gln  
65 70 75 80

Gly Thr Glu Leu Pro Gln Ser Asn Arg Asp Asn Ile Arg Thr Ala Lys  
85 90 95

Ser Asn Gly Ile Ser Leu Pro Tyr Thr Pro Asn Ser Phe Thr Pro Leu  
100 105 110

Pro Gly Ser Ser Leu Tyr Ile Ile Asn Pro Ala Asn Lys Gly Tyr Leu  
115 120 125

Val Glu Thr Asp Pro Arg Phe Ala Asn Tyr Arg Gln Trp Leu Gly Ser  
130 135 140

Asp Tyr Met Leu Gly Ser Leu Lys Leu Asp Pro Asn Asn Leu His Lys  
145 150 155 160

Arg Leu Gly Asp Gly Tyr Tyr Glu Gln Arg Leu Ile Asn Glu Gln Ile  
165 170 175

Ala Glu Leu Thr Gly His Arg Arg Leu Asp Gly Tyr Gln Asn Asp Glu  
180 185 190

Glu Gln Phe Lys Ala Leu Met Asp Asn Gly Ala Thr Ala Ala Arg Ser  
195 200 205

Met Asn Leu Ser Val Gly Ile Ala Leu Ser Ala Glu Gln Ala Ala Gln  
210 215 220

Leu Thr Ser Asp Ile Val Trp Leu Val Gln Lys Glu Val Lys Leu Pro  
225 230 235 240

Asp Gly Gly Thr Gln Thr Val Leu Met Pro Gln Val Tyr Val Arg Val  
245 250 255

Lys Asn Gly Gly Ile Asp Gly Lys Gly Ala Leu Leu Ser Gly Ser Asn  
 260 265 270  
 Thr Gln Ile Asn Val Ser Gly Ser Leu Lys Asn Ser Gly Thr Ile Ala  
 275 280 285  
 Gly Arg Asn Ala Leu Ile Ile Asn Thr Asp Thr Leu Asp Asn Ile Gly  
 290 295 300  
 Gly Arg Ile His Ala Gln Lys Ser Ala Val Thr Ala Thr Gln Asp Ile  
 305 310 315 320  
 Asn Asn Ile Gly Gly Ile Leu Ser Ala Glu Gln Thr Leu Leu Leu Asn  
 325 330 335  
 Ala Gly Asn Asn Ile Asn Asn Gln Ser Thr Ala Lys Ser Ser Gln Asn  
 340 345 350  
 Ala Gln Gly Ser Ser Thr Tyr Leu Asp Arg Met Ala Gly Ile Tyr Ile  
 355 360 365  
 Thr Gly Lys Glu Lys Gly Val Leu Ala Ala Gln Ala Gly Lys Asp Ile  
 370 375 380  
 Asn Ile Ile Ala Gly Gln Ile Ser Asn Gln Ser Asp Gln Gly Gln Thr  
 385 390 395 400  
 Arg Leu Gln Ala Gly Arg Asp Ile Asn Leu Asp Thr Val Gln Thr Gly  
 405 410 415  
 Lys Tyr Gln Glu Ile His Phe Asp Ala Asp Asn His Thr Ile Arg Gly  
 420 425 430  
 Ser Thr Asn Glu Val Gly Ser Ser Ile Gln Thr Lys Gly Asp Val Thr  
 435 440 445  
 Leu Leu Ser Gly Asn Asn Leu Asn Ala Lys Ala Ala Glu Val Gly Ser  
 450 455 460  
 Ala Lys Gly Thr Leu Ala Val Tyr Ala Lys Asn Asp Ile Thr Ile Ser  
 465 470 475 480  
 Ser Gly Ile His Ala Gly Gln Val Asp Asp Ala Ser Lys His Thr Gly  
 485 490 495  
 Arg Ser Gly Gly Gly Asn Lys Leu Val Ile Thr Asp Lys Ala Gln Ser  
 500 505 510  
 His His Glu Thr Ala Gln Ser Ser Thr Phe Glu Gly Lys Gln Val Val  
 515 520 525  
 Leu Gln Ala Gly Asn Asp Ala Asn Ile Leu Gly Ser Asn Val Ile Ser  
 530 535 540  
 Asp Asn Gly Thr Arg Ile Gln Ala Gly Asn His Val Arg Ile Gly Thr  
 545 550 555 560

Thr Gln Thr Gln Ser Gln Ser Glu Thr Tyr His Gln Thr Gln Lys Ser  
 565 570 575  
 Gly Leu Met Ser Ala Gly Ile Gly Phe Thr Ile Gly Ser Lys Thr Asn  
 580 585 590  
 Thr Gln Glu Asn Gln Ser Gln Ser Asn Glu His Thr Gly Ser Thr Val  
 595 600 605  
 Gly Ser Leu Lys Gly Asp Thr Thr Ile Val Ala Ser Lys His Tyr Glu  
 610 615 620  
 Gln Thr Gly Ser Asn Val Ser Ser Pro Glu Gly Asn Asn Leu Ile Ser  
 625 630 635 640  
 Thr Gln Ser Met Asp Ile Gly Ala Ala Gln Asn Gln Leu Asn Ser Lys  
 645 650 655  
 Thr Thr Gln Thr Tyr Glu Gln Lys Gly Leu Thr Val Ala Phe Ser Ser  
 660 665 670  
 Pro Val Thr Asp Leu Ala Gln Gln Ala Ile Ala Val Ala His Lys Ala  
 675 680 685  
 Ala Lys Gln Phe Asp Lys Ala Lys Thr Thr Ala Leu Met Pro Trp Arg  
 690 695 700  
 Leu Pro Met Gln Val Gly Arg Leu Phe Lys Gln Ala Lys Ala Pro Lys  
 705 710 715 720

Lys

<210> 515  
 <211> 2166  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 515  
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 gaaacagggc atcgtgaaca aaattatact ttgccggagg aaatcacacg cgacatttca 180  
 ctgggttcat ttgcctatga atcgcatagc aaagcattaa gccgtcatgc gccagccaa 240  
 ggcaactgagt tgccacaaaag taaccgggat aatatccgta ctgcgaaaag caacggtatt 300  
 tcgctaccct atacgccccaa ttcttttacc ccattaccgg gcagcagctt atacattatc 360  
 aatcctgcc aataaaggcta tcttggtgaa accgatccac gctttgccaa ctaccgtcaa 420  
 tgggtgggta gtgactatat gctgggcagc ctcaaactag acccaaaca tttacataaa 480  
 cgtttggttg atggttatta cgagcaacgt ttaatcaatg aacaaatcgc agagctgaca 540  
 gggcatcgtc gtttagacgg ttatcaaaac gacgaagaac aattttaaagc cttaattgat 600  
 aatggcgcg aactgaccag cgatattgtt tgggttggtac aaaaagaagt taaacttcct 660  
 caagcagcgc caaaaaccgt attgatgcca caggtttatg tacgcgttaa aaatggcggc 720  
 atagacggta aagggtgcatt gttgtcaggc agcaatacac aaatcaatgt ttcaggcagc 780  
 ctgaaaaact caggcacgat tgcagggcgc aatgcgctta ttatcaatac cgatacgcta 840  
 gacaatatcg gtgggcgtat tcatgcgcaa aaatcagcgg ttacggccac acaagacatc 900  
 aataatattg gcggcattct ttctgccgaa cagacattat tgctcaatgc gggttaacaac 1020

atcaacaacc	aaagcacggc	caagagcagt	caaaatgcac	aaggtagcag	cacctaccta	1080
gaccgaatgg	caggtattta	tatcacaggc	aaagaaaaag	gtgttttagc	agcgcaggca	1140
ggcaaaagaca	tcaacatcat	tgccggtcaa	atcagcâatc	aatcagatca	agggcaaacc	1200
cggctgcagg	caggacgcga	cattaacctg	gatacggtac	aaaccggcaa	atatcaagaa	1260
atccattttg	atgccgataa	ccataccatc	cgagggttcaa	cgaacgaagt	cggcagcagc	1320
attcaaacaa	aaggcgatgt	taccctattg	tcagggaata	atctcaatgc	caaagctgcc	1380
gaagtcggca	gcgcaaaagg	cacacttgcc	gtgtatgcta	aaaatgacat	tactatcagc	1440
tcaggcatcc	atgccggcca	agttgatgat	gcgtccaaac	atacaggcag	aagcggcggc	1500
ggtaataaat	tagtcattac	cgataaagcc	caaagtcac	acgaaactgc	tcaaagcagc	1560
acctttgaag	gcaagcaagt	tgtattgcag	gcaggaaacg	atgccaacat	ccttggcagt	1620
aatggtattt	ccgataatgg	cacccggatt	caagcaggca	atcatgttcg	cattggtaca	1680
acccaaactc	aaagccaaag	cgaaacctat	catcaaacc	aaaaatcagg	attgatgagt	1740
gcagggtatcg	gcttcactat	tggcagcaag	acaaacacac	aagaaaaacca	atcccaaagc	1800
aacgaacata	caggcgagtac	cgtaggcagc	ctgaaaggcg	ataccaccat	tgttgcaagc	1860
aaacactacg	aacaaaccgg	cagcaacgtt	tccagccctg	agggcaacaa	ccttatcagc	1920
acgcaaagta	tggatattgg	cgcagcacia	aaccaattaa	acagcaaaac	cacccaaacc	1980
tacgaacaaa	aaggcttaac	ggtggcattc	agttcgcccg	ttaccgattt	ggcacaacaa	2040
gcgattgccg	tagcacacaa	agcagcaaac	aagtcggaca	aagcaaaaac	gaccgcgtta	2100
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acttag						2166

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 <211> 721  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 516  
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 Gly Glu Lys Lys Val Phe Ser Glu Asn Gly Lys Leu His Asn Tyr Trp  
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 Arg Ala Arg Arg Lys Gly His Asp Glu Thr Gly His Arg Glu Gln Asn  
 35 40 45  
 Tyr Thr Leu Pro Glu Glu Ile Thr Arg Asp Ile Ser Leu Gly Ser Phe  
 50 55 60  
 Ala Tyr Glu Ser His Ser Lys Ala Leu Ser Arg His Ala Pro Ser Gln  
 65 70 75 80  
 Gly Thr Glu Leu Pro Gln Ser Asn Arg Asp Asn Ile Arg Thr Ala Lys  
 85 90 95  
 Ser Asn Gly Ile Ser Leu Pro Tyr Thr Pro Asn Ser Phe Thr Pro Leu  
 100 105 110  
 Pro Gly Ser Ser Leu Tyr Ile Ile Asn Pro Ala Asn Lys Gly Tyr Leu  
 115 120 125  
 Val Glu Thr Asp Pro Arg Phe Ala Asn Tyr Arg Gln Trp Leu Gly Ser  
 130 135 140  
 Asp Tyr Met Leu Gly Ser Leu Lys Leu Asp Pro Asn Asn Leu His Lys  
 145 150 155 160

Arg	Leu	Gly	Asp	Gly	Tyr	Tyr	Glu	Gln	Arg	Leu	Ile	Asn	Glu	Gln	Ile	165	170	175
Ala	Glu	Leu	Thr	Gly	His	Arg	Arg	Leu	Asp	Gly	Tyr	Gln	Asn	Asp	Glu	180	185	190
Glu	Gln	Phe	Lys	Ala	Leu	Met	Asp	Asn	Gly	Ala	Thr	Ala	Ala	Arg	Ser	195	200	205
Met	Asn	Leu	Ser	Val	Gly	Ile	Ala	Leu	Ser	Ala	Glu	Gln	Ala	Ala	Gln	210	215	220
Leu	Thr	Ser	Asp	Ile	Val	Trp	Leu	Val	Gln	Lys	Glu	Val	Lys	Leu	Pro	225	230	235
Asp	Gly	Gly	Thr	Gln	Thr	Val	Leu	Met	Pro	Gln	Val	Tyr	Val	Arg	Val	245	250	255
Lys	Asn	Gly	Gly	Ile	Asp	Gly	Lys	Gly	Ala	Leu	Leu	Ser	Gly	Ser	Asn	260	265	270
Thr	Gln	Ile	Asn	Val	Ser	Gly	Ser	Leu	Lys	Asn	Ser	Gly	Thr	Ile	Ala	275	280	285
Gly	Arg	Asn	Ala	Leu	Ile	Ile	Asn	Thr	Asp	Thr	Leu	Asp	Asn	Ile	Gly	290	295	300
Gly	Arg	Ile	His	Ala	Gln	Lys	Ser	Ala	Val	Thr	Ala	Thr	Gln	Asp	Ile	305	310	315
Asn	Asn	Ile	Gly	Gly	Ile	Leu	Ser	Ala	Glu	Gln	Thr	Leu	Leu	Leu	Asn	325	330	335
Ala	Gly	Asn	Asn	Ile	Asn	Asn	Gln	Ser	Thr	Ala	Lys	Ser	Ser	Gln	Asn	340	345	350
Ala	Gln	Gly	Ser	Ser	Thr	Tyr	Leu	Asp	Arg	Met	Ala	Gly	Ile	Tyr	Ile	355	360	365
Thr	Gly	Lys	Glu	Lys	Gly	Val	Leu	Ala	Ala	Gln	Ala	Gly	Lys	Asp	Ile	370	375	380
Asn	Ile	Ile	Ala	Gly	Gln	Ile	Ser	Asn	Gln	Ser	Asp	Gln	Gly	Gln	Thr	385	390	395
Arg	Leu	Gln	Ala	Gly	Arg	Asp	Ile	Asn	Leu	Asp	Thr	Val	Gln	Thr	Gly	405	410	415
Lys	Tyr	Gln	Glu	Ile	His	Phe	Asp	Ala	Asp	Asn	His	Thr	Ile	Arg	Gly	420	425	430
Ser	Thr	Asn	Glu	Val	Gly	Ser	Ser	Ile	Gln	Thr	Lys	Gly	Asp	Val	Thr	435	440	445
Leu	Leu	Ser	Gly	Asn	Asn	Leu	Asn	Ala	Lys	Ala	Ala	Glu	Val	Gly	Ser	450	455	460

Ala Lys Gly Thr Leu Ala Val Tyr Ala Lys Asn Asp Ile Thr Ile Ser																			
465					470					475									480
Ser Gly Ile His Ala Gly Gln Val Asp Asp Ala Ser Lys His Thr Gly					485					490									495
Arg Ser Gly Gly Gly Asn Lys Leu Val Ile Thr Asp Lys Ala Gln Ser					500					505									510
His His Glu Thr Ala Gln Ser Ser Thr Phe Glu Gly Lys Gln Val Val					515														525
Leu Gln Ala Gly Asn Asp Ala Asn Ile Leu Gly Ser Asn Val Ile Ser					530					535									540
Asp Asn Gly Thr Arg Ile Gln Ala Gly Asn His Val Arg Ile Gly Thr					545					550									560
Thr Gln Thr Gln Ser Gln Ser Glu Thr Tyr His Gln Thr Gln Lys Ser					565					570									575
Gly Leu Met Ser Ala Gly Ile Gly Phe Thr Ile Gly Ser Lys Thr Asn					580					585									590
Thr Gln Glu Asn Gln Ser Gln Ser Asn Glu His Thr Gly Ser Thr Val					595					600									605
Gly Ser Leu Lys Gly Asp Thr Thr Ile Val Ala Ser Lys His Tyr Glu					610					615									620
Gln Thr Gly Ser Asn Val Ser Ser Pro Glu Gly Asn Asn Leu Ile Ser					625					630									635
Thr Gln Ser Met Asp Ile Gly Ala Ala Gln Asn Gln Leu Asn Ser Lys					645					650									655
Thr Thr Gln Thr Tyr Glu Gln Lys Gly Leu Thr Val Ala Phe Ser Ser					660					665									670
Pro Val Thr Asp Leu Ala Gln Gln Ala Ile Ala Val Ala His Lys Ala					675					680									685
Ala Asn Lys Ser Asp Lys Ala Lys Thr Thr Ala Leu Met Pro Trp Arg					690					695									700
Leu Pro Met Gln Val Gly Arg Pro Ile Lys Gln Ala Lys Ala His Lys					705					710									715
																			720

Thr

- <210> 517
- <211> 689
- <212> DNA
- <213> Neisseria meningitidis



<400> 517

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gcgtccaaac	acacaggcag	aagcgggtgg	ggcaataaat	tagtcattac	cgataaagcc	180
caaagtcac	acgaaaccgc	ccaaagcagc	acctttgaag	gcaagcaagt	tgtattgcag	240
gcaggaaacg	atgccaacat	ccttggcagc	aatgttat	ccgataatgg	cacccagatt	300
caagcaggca	atcatgttcg	cattggtaca	acccaaactc	aaagccaaag	cgaaacctat	360
catcaaacc	agaaatcagg	attgatgagt	gcagggtatc	gcttcactat	tggcagcaag	420
acaaacacac	aagaaaacca	atcccaaagc	aacgaacata	caggcagtac	cgtaggcagc	480
ttgaaaggcg	ataccacat	tgttgcaggc	aaacactacg	aacaaatcgg	cagtaccgtt	540
tccagcccg	aaggcaaca	taccatctat	gccc aaagca	tagacattca	agcggcacac	600
aacaaattaa	acagtaatac	cacccaaacc	tatgaacaaa	aaggctaacg	gtggcattca	660
gttcgcccgt	taccgatttg	gcacaacaa				689

<210> 518

<211> 230

<212> PRT

<213> Neisseria meningitidis

<220>

<221> misc\_feature

<222> (215)..(215)

<223> Xaa= any amino acid

<400> 518

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Gly	Thr	Leu	Ala	Val	Ser	Ala	Asn	Asn	Asp	Ile	Asn	Ile	Ser	Ala	Gly
		20					25					30			
Ile	Asn	Thr	Thr	His	Val	Asp	Asp	Ala	Ser	Lys	His	Thr	Gly	Arg	Ser
	35					40						45			
Gly	Gly	Gly	Asn	Lys	Leu	Val	Ile	Thr	Asp	Lys	Ala	Gln	Ser	His	His
	50				55						60				
Glu	Thr	Ala	Gln	Ser	Ser	Thr	Phe	Glu	Gly	Lys	Gln	Val	Val	Leu	Gln
65				70					75					80	
Ala	Gly	Asn	Asp	Ala	Asn	Ile	Leu	Gly	Ser	Asn	Val	Ile	Ser	Asp	Asn
			85					90						95	
Gly	Thr	Gln	Ile	Gln	Ala	Gly	Asn	His	Val	Arg	Ile	Gly	Thr	Thr	Gln
		100					105						110		
Thr	Gln	Ser	Gln	Ser	Glu	Thr	Tyr	His	Gln	Thr	Gln	Lys	Ser	Gly	Leu
	115						120					125			
Met	Ser	Ala	Gly	Ile	Gly	Phe	Thr	Ile	Gly	Ser	Lys	Thr	Asn	Thr	Gln
	130					135					140				
Glu	Asn	Gln	Ser	Gln	Ser	Asn	Glu	His	Thr	Gly	Ser	Thr	Val	Gly	Ser
145				150						155				160	
Leu	Lys	Gly	Asp	Thr	Thr	Ile	Val	Ala	Gly	Lys	His	Tyr	Glu	Gln	Ile

165	170	175
Gly Ser Thr Val Ser Ser Pro Glu Gly Asn Asn Thr Ile Tyr Ala Gln		
180	185	190
Ser Ile Asp Ile Gln Ala Ala His Asn Lys Leu Asn Ser Asn Thr Thr		
195	200	205
Gln Thr Tyr Glu Gln Lys Xaa Leu Thr Val Ala Phe Ser Ser Pro Val		
210	215	220
Thr Asp Leu Ala Gln Gln		
225	230	

<210> 519  
 <211> 8  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> misc\_feature  
 <222> (1)..(8)  
 <223> N= Unknown

<400> 519  
 nnnnnnnnn

8

<210> 520  
 <211> 721  
 <212> PRT  
 <213> Neisseria gonorrhoeae

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 Gly Glu Lys Lys Val Phe Ser Glu Asn Gly Lys Leu His Asn Tyr Trp  
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 Arg Ala Arg Arg Lys Gly His Asp Glu Thr Gly His Arg Glu Gln Asn  
 35 40 45  
 Tyr Thr Leu Pro Glu Glu Ile Thr Arg Asp Ile Ser Leu Gly Ser Phe  
 50 55 60  
 Ala Tyr Glu Ser His Ser Lys Ala Leu Ser Arg His Ala Pro Ser Gln  
 65 70 75 80  
 Gly Thr Glu Leu Pro Gln Ser Asn Arg Asp Asn Ile Arg Thr Ala Lys  
 85 90 95  
 Ser Asn Gly Ile Ser Leu Pro Tyr Thr Pro Asn Ser Phe Thr Pro Leu  
 100 105 110  
 Pro Gly Ser Ser Leu Tyr Ile Ile Asn Pro Ala Asn Lys Gly Tyr Leu  
 115 120 125

Val	Glu	Thr	Asp	Pro	Arg	Phe	Ala	Asn	Tyr	Arg	Gln	Trp	Leu	Gly	Ser	130	135	140
Asp	Tyr	Met	Leu	Gly	Ser	Leu	Lys	Leu	Asp	Pro	Asn	Asn	Leu	His	Lys	145	150	155
Arg	Leu	Gly	Asp	Gly	Tyr	Tyr	Glu	Gln	Arg	Leu	Ile	Asn	Glu	Gln	Ile	165	170	175
Ala	Glu	Leu	Thr	Gly	His	Arg	Arg	Leu	Asp	Gly	Tyr	Gln	Asn	Asp	Glu	180	185	190
Glu	Gln	Phe	Lys	Ala	Leu	Met	Asp	Asn	Gly	Ala	Thr	Ala	Ala	Arg	Ser	195	200	205
Met	Asn	Leu	Ser	Val	Gly	Ile	Ala	Leu	Ser	Ala	Glu	Gln	Ala	Ala	Gln	210	215	220
Leu	Thr	Ser	Asp	Ile	Val	Trp	Leu	Val	Gln	Lys	Glu	Val	Lys	Leu	Pro	225	230	235
Asp	Gly	Gly	Thr	Gln	Thr	Val	Leu	Met	Pro	Gln	Val	Tyr	Val	Arg	Val	245	250	255
Lys	Asn	Gly	Gly	Ile	Asp	Gly	Lys	Gly	Ala	Leu	Leu	Ser	Gly	Ser	Asn	260	265	270
Thr	Gln	Ile	Asn	Val	Ser	Gly	Ser	Leu	Lys	Asn	Ser	Gly	Thr	Ile	Ala	275	280	285
Gly	Arg	Asn	Ala	Leu	Ile	Ile	Asn	Thr	Asp	Thr	Leu	Asp	Asn	Ile	Gly	290	295	300
Gly	Arg	Ile	His	Ala	Gln	Lys	Ser	Ala	Val	Thr	Ala	Thr	Gln	Asp	Ile	305	310	315
Asn	Asn	Ile	Gly	Gly	Ile	Leu	Ser	Ala	Glu	Gln	Thr	Leu	Leu	Leu	Asn	325	330	335
Ala	Gly	Asn	Asn	Ile	Asn	Asn	Gln	Ser	Thr	Ala	Lys	Ser	Ser	Gln	Asn	340	345	350
Ala	Gln	Gly	Ser	Ser	Thr	Tyr	Leu	Asp	Arg	Met	Ala	Gly	Ile	Tyr	Ile	355	360	365
Thr	Gly	Lys	Glu	Lys	Gly	Val	Leu	Ala	Ala	Gln	Ala	Gly	Lys	Asp	Ile	370	375	380
Asn	Ile	Ile	Ala	Gly	Gln	Ile	Ser	Asn	Gln	Ser	Asp	Gln	Gly	Gln	Thr	385	390	395
Arg	Leu	Gln	Ala	Gly	Arg	Asp	Ile	Asn	Leu	Asp	Thr	Val	Gln	Thr	Gly	405	410	415
Lys	Tyr	Gln	Glu	Ile	His	Phe	Asp	Ala	Asp	Asn	His	Thr	Ile	Arg	Gly	420	425	430

Ser Thr Asn Glu Val Gly Ser Ser Ile Gln Thr Lys Gly Asp Val Thr  
 435 440 445  
 Leu Leu Ser Gly Asn Asn Leu Asn Ala Lys Ala Ala Glu Val Gly Ser  
 450 455 460  
 Ala Lys Gly Thr Leu Ala Val Tyr Ala Lys Asn Asp Ile Thr Ile Ser  
 465 470 475 480  
 Ser Gly Ile His Ala Gly Gln Val Asp Asp Ala Ser Lys His Thr Gly  
 485 490 495  
 Arg Ser Gly Gly Gly Asn Lys Leu Val Ile Thr Asp Lys Ala Gln Ser  
 500 505 510  
 His His Glu Thr Ala Gln Ser Ser Thr Phe Glu Gly Lys Gln Val Val  
 515 520 525  
 Leu Gln Ala Gly Asn Asp Ala Asn Ile Leu Gly Ser Asn Val Ile Ser  
 530 535 540  
 Asp Asn Gly Thr Arg Ile Gln Ala Gly Asn His Val Arg Ile Gly Thr  
 545 550 555 560  
 Thr Gln Thr Gln Ser Gln Ser Glu Thr Tyr His Gln Thr Gln Lys Ser  
 565 570 575  
 Gly Leu Met Ser Ala Gly Ile Gly Phe Thr Ile Gly Ser Lys Thr Asn  
 580 585 590  
 Thr Gln Glu Asn Gln Ser Gln Ser Asn Glu His Thr Gly Ser Thr Val  
 595 600 605  
 Gly Ser Leu Lys Gly Asp Thr Thr Ile Val Ala Ser Lys His Tyr Glu  
 610 615 620  
 Gln Thr Gly Ser Asn Val Ser Ser Pro Glu Gly Asn Asn Leu Ile Ser  
 625 630 635 640  
 Thr Gln Ser Met Asp Ile Gly Ala Ala Gln Asn Gln Leu Asn Ser Lys  
 645 650 655  
 Thr Thr Gln Thr Tyr Glu Gln Lys Gly Leu Thr Val Ala Phe Ser Ser  
 660 665 670  
 Pro Val Thr Asp Leu Ala Gln Gln Ala Ile Ala Val Ala His Lys Ala  
 675 680 685  
 Ala Lys Gln Phe Asp Lys Ala Lys Thr Thr Ala Leu Met Pro Trp Arg  
 690 695 700  
 Leu Pro Met Gln Val Gly Arg Leu Phe Lys Gln Ala Lys Ala Pro Lys  
 705 710 715 720  
 Lys

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 <211> 2166  
 <212> DNA  
 <213> Neisseria gonorrhoeae

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 gaaacagggc atcgtgaaca aaattatact ttgccggagg aaatcacacg cgacatttca 180  
 ctgggttcat ttgcctatga atcgcatagc aaagcattaa gccgtcatgc gccagccaa 240  
 ggactgagt tgccacaaag taaccgggat aatatccgta ctgcgaaaag caacggtatt 300  
 tcgtaccct atacgcccac ttcttttacc ccattaccg gcagcagctt atacattatc 360  
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<210> 522  
 <211> 721  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 522  
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Arg Ala Arg Arg Lys Gly His Asp Glu Thr Gly His Arg Glu Gln Asn  
 35 40 45  
 Tyr Thr Leu Pro Glu Glu Ile Thr Arg Asp Ile Ser Leu Gly Ser Phe  
 50 55 60  
 Ala Tyr Glu Ser His Ser Lys Ala Leu Ser Arg His Ala Pro Ser Gln  
 65 70 75 80  
 Gly Thr Glu Leu Pro Gln Ser Asn Arg Asp Asn Ile Arg Thr Ala Lys  
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 Ser Asn Gly Ile Ser Leu Pro Tyr Thr Pro Asn Ser Phe Thr Pro Leu  
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 Pro Gly Ser Ser Leu Tyr Ile Ile Asn Pro Ala Asn Lys Gly Tyr Leu  
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 Val Glu Thr Asp Pro Arg Phe Ala Asn Tyr Arg Gln Trp Leu Gly Ser  
 130 135 140  
 Asp Tyr Met Leu Gly Ser Leu Lys Leu Asp Pro Asn Asn Leu His Lys  
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 Arg Leu Gly Asp Gly Tyr Tyr Glu Gln Arg Leu Ile Asn Glu Gln Ile  
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 Ala Glu Leu Thr Gly His Arg Arg Leu Asp Gly Tyr Gln Asn Asp Glu  
 180 185 190  
 Glu Gln Phe Lys Ala Leu Met Asp Asn Gly Ala Thr Ala Ala Arg Ser  
 195 200 205  
 Met Asn Leu Ser Val Gly Ile Ala Leu Ser Ala Glu Gln Ala Ala Gln  
 210 215 220  
 Leu Thr Ser Asp Ile Val Trp Leu Val Gln Lys Glu Val Lys Leu Pro  
 225 230 235 240  
 Asp Gly Gly Thr Gln Thr Val Leu Met Pro Gln Val Tyr Val Arg Val  
 245 250 255  
 Lys Asn Gly Gly Ile Asp Gly Lys Gly Ala Leu Leu Ser Gly Ser Asn  
 260 265 270  
 Thr Gln Ile Asn Val Ser Gly Ser Leu Lys Asn Ser Gly Thr Ile Ala  
 275 280 285  
 Gly Arg Asn Ala Leu Ile Ile Asn Thr Asp Thr Leu Asp Asn Ile Gly  
 290 295 300  
 Gly Arg Ile His Ala Gln Lys Ser Ala Val Thr Ala Thr Gln Asp Ile  
 305 310 315 320  
 Asn Asn Ile Gly Gly Ile Leu Ser Ala Glu Gln Thr Leu Leu Leu Asn  
 325 330 335

Ala Gly Asn Asn Ile Asn Asn Gln Ser Thr Ala Lys Ser Ser Gln Asn	340	345	350
Ala Gln Gly Ser Ser Thr Tyr Leu Asp Arg Met Ala Gly Ile Tyr Ile	355	360	365
Thr Gly Lys Glu Lys Gly Val Leu Ala Ala Gln Ala Gly Lys Asp Ile	370	375	380
Asn Ile Ile Ala Gly Gln Ile Ser Asn Gln Ser Asp Gln Gly Gln Thr	385	390	395
Arg Leu Gln Ala Gly Arg Asp Ile Asn Leu Asp Thr Val Gln Thr Gly	405	410	415
Lys Tyr Gln Glu Ile His Phe Asp Ala Asp Asn His Thr Ile Arg Gly	420	425	430
Ser Thr Asn Glu Val Gly Ser Ser Ile Gln Thr Lys Gly Asp Val Thr	435	440	445
Leu Leu Ser Gly Asn Asn Leu Asn Ala Lys Ala Ala Glu Val Gly Ser	450	455	460
Ala Lys Gly Thr Leu Ala Val Tyr Ala Lys Asn Asp Ile Thr Ile Ser	465	470	475
Ser Gly Ile His Ala Gly Gln Val Asp Asp Ala Ser Lys His Thr Gly	485	490	495
Arg Ser Gly Gly Gly Asn Lys Leu Val Ile Thr Asp Lys Ala Gln Ser	500	505	510
His His Glu Thr Ala Gln Ser Ser Thr Phe Glu Gly Lys Gln Val Val	515	520	525
Leu Gln Ala Gly Asn Asp Ala Asn Ile Leu Gly Ser Asn Val Ile Ser	530	535	540
Asp Asn Gly Thr Arg Ile Gln Ala Gly Asn His Val Arg Ile Gly Thr	545	550	555
Thr Gln Thr Gln Ser Gln Ser Glu Thr Tyr His Gln Thr Gln Lys Ser	565	570	575
Gly Leu Met Ser Ala Gly Ile Gly Phe Thr Ile Gly Ser Lys Thr Asn	580	585	590
Thr Gln Glu Asn Gln Ser Gln Ser Asn Glu His Thr Gly Ser Thr Val	595	600	605
Gly Ser Leu Lys Gly Asp Thr Thr Ile Val Ala Ser Lys His Tyr Glu	610	615	620
Gln Thr Gly Ser Asn Val Ser Ser Pro Glu Gly Asn Asn Leu Ile Ser	625	630	635
			640





Phe Gly His Ser Asp Lys Asp Ala Leu Leu Asn Ser Xaa Thr Ser His  
35 40 45

Val Arg Asp Gly Lys Pro Ser Gly Gly Ser Val Met Met Pro Lys Pro  
50 55 60

Gln Pro Ala Val Lys Lys Thr Ala Lys Pro Gln Asp Pro Xaa Met Arg  
65 70 75 80

Asn Leu Gln Glu Gln Asp Ala Val Tyr Ile Ala Lys Gln Lys Gln Ala  
85 90 95

Lys Ala Ser Pro Phe Lys Thr Glu Ile Glu Thr Ala Leu Glu Glu Ser  
100 105 110

Gly Ile Ile Gly Asn Ser Ala His Thr Val Ser Glu Pro Gln Thr Gly  
115 120 125

His Ser Ala Thr Lys Pro Ala Asp Ala Ser Ala Lys Pro Ala Pro Val  
130 135 140

Pro Gln Thr Pro Ala Lys Pro Leu Ile Thr Leu Lys Glu Leu Ser Lys  
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Val Glu Leu Ser Trp Phe Asp Val Arg Ile Asp Phe Ile Ser Tyr  
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<210> 525

<211> 1287

<212> DNA

<213> Neisseria meningitidis

<400> 525

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ctgctcaaca	gcaaaaccag	ccatgtccgc	gacggcaaac	cgtcggcgcg	gtcagtcagc	180
atgccgaaac	cccaaccggc	ggtcaaaaaa	acggcaaaac	cccaagaccc	cgccatgcgc	240
aacctgcaag	aacaggatgc	cgtctacatc	gccaagcaga	aacaggcaaa	agcctccccg	300
ttcaaaaccg	aaatcgaaac	cgccttgga	gaaagcggca	ttatcggcaa	ctccgccccac	360
accgtttccg	aaccccaaac	cggacattcc	gcaccgaaac	ctgccgacgc	gccggcaaaa	420
cctgcacccg	ttccgcaaac	acctgcaaaa	ccgctgatta	cgctcaaaga	actgtcaaaa	480
gtcgaattac	cctggtttga	cgtgcgcttc	gacttcatct	cctatatcgc	gctgaccgaa	540
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tgcaccatgg	acgaccattt	ccagattgcc	gaaccatcc	cgggcatccg	ctatcaggca	660
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gcattcaacc	gccaggtgga	cgcattcgca	caaagcatgg	gcggtcagac	gctgcacacc	780
gaccttgccg	cctttatcga	agtggcttcc	gcactggacg	cattctgcgc	gcgcgtcgac	840
cagaccatcg	ccatccattt	ggtttccccg	accagcatca	gcggcgtaga	actgcgttcc	900
gccgtaacgg	gcgtgggttt	cgttttggaa	gacgacggcg	cgttccacta	taccgacacg	960
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<210> 526  
<211> 428  
<212> PRT  
<213> Neisseria meningitidis

<400> 526

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		20					25					30			
Phe	Gly	His	Ser	Asp	Lys	Asp	Ala	Leu	Leu	Asn	Ser	Lys	Thr	Ser	His
		35				40					45				
Val	Arg	Asp	Gly	Lys	Pro	Ser	Gly	Gly	Ser	Val	Met	Met	Pro	Lys	Pro
	50					55					60				
Gln	Pro	Ala	Val	Lys	Lys	Thr	Ala	Lys	Pro	Gln	Asp	Pro	Ala	Met	Arg
65				70					75				80		
Asn	Leu	Gln	Glu	Gln	Asp	Ala	Val	Tyr	Ile	Ala	Lys	Gln	Lys	Gln	Ala
			85					90						95	
Lys	Ala	Ser	Pro	Phe	Lys	Thr	Glu	Ile	Glu	Thr	Ala	Leu	Glu	Glu	Ser
		100					105						110		
Gly	Ile	Ile	Gly	Asn	Ser	Ala	His	Thr	Val	Ser	Glu	Pro	Gln	Thr	Gly
		115					120					125			
His	Ser	Ala	Pro	Lys	Pro	Ala	Asp	Ala	Pro	Ala	Lys	Pro	Ala	Pro	Val
	130					135					140				
Pro	Gln	Thr	Pro	Ala	Lys	Pro	Leu	Ile	Thr	Leu	Lys	Glu	Leu	Ser	Lys
145				150					155					160	
Val	Glu	Leu	Pro	Trp	Phe	Asp	Val	Arg	Phe	Asp	Phe	Ile	Ser	Tyr	Ile
			165					170					175		
Ala	Leu	Thr	Glu	Ala	Lys	Glu	Leu	His	Ala	Leu	Pro	Arg	Leu	Ser	Asn
		180						185					190		
Arg	Cys	Arg	Tyr	Gln	Ile	Val	Gly	Cys	Thr	Met	Asp	Asp	His	Phe	Gln
	195						200					205			
Ile	Ala	Glu	Pro	Ile	Pro	Gly	Ile	Arg	Tyr	Gln	Ala	Phe	Ile	Val	Gly
	210					215					220				
Ile	Gln	Ala	Val	Ser	Arg	Asn	Gly	Leu	Ala	Ser	Gln	Glu	Glu	Leu	Ser
225				230						235				240	
Ala	Phe	Asn	Arg	Gln	Val	Asp	Ala	Phe	Ala	Gln	Ser	Met	Gly	Gly	Gln
			245					250						255	
Thr	Leu	His	Thr	Asp	Leu	Ala	Ala	Phe	Ile	Glu	Val	Ala	Ser	Ala	Leu
		260						265						270	

Asp Ala Phe Cys Ala Arg Val Asp Gln Thr Ile Ala Ile His Leu Val  
275 280 285

Ser Pro Thr Ser Ile Ser Gly Val Glu Leu Arg Ser Ala Val Thr Gly  
290 295 300

Val Gly Phe Val Leu Glu Asp Asp Gly Ala Phe His Tyr Thr Asp Thr  
305 310 315 320

Ser Gly Ser Thr Met Phe Ser Ile Cys Ser Leu Asn Asn Glu Pro Phe  
325 330 335

Thr Asn Ala Leu Leu Asp Asn Gln Ser Tyr Lys Gly Phe Ser Met Leu  
340 345 350

Leu Asp Ile Pro His Ser Pro Ala Gly Glu Lys Thr Phe Asp Asp Leu  
355 360 365

Phe Met Asp Leu Ala Val Arg Leu Ser Gly Gln Leu Asn Leu Asn Leu  
370 375 380

Val Asn Asp Lys Met Glu Glu Val Ser Thr Gln Trp Leu Lys Asp Val  
385 390 395 400

Arg Thr Tyr Val Leu Ala Arg Gln Ser Glu Met Leu Lys Val Gly Ile  
405 410 415

Glu Pro Gly Gly Lys Thr Ala Leu Arg Leu Phe Ser  
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<210> 527

<211> 1287

<212> DNA

<213> Neisseria meningitidis

<400> 527

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cctgttcccc	ttccgcaaac	gccggcaaaa	ccgctgatta	cgctcaaaga	gctgtcgaag	480
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gccaaagaac	tgcacgcact	gccgcgcctt	tccaaccgct	gccgctacca	gattgtcggc	600
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<210> 528  
 <211> 428  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 528

Met	Ile	Tyr	Ile	Val	Leu	Phe	Leu	Ala	Ala	Val	Leu	Ala	Val	Val	Ala	
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			20					25					30			
Phe	Gly	His	Ser	Asp	Lys	Asp	Ala	Leu	Leu	Asn	Ser	Lys	Thr	Ser	His	
		35					40					45				
Val	Arg	Asp	Gly	Lys	Pro	Ser	Gly	Gly	Pro	Val	Met	Met	Pro	Lys	Pro	
	50					55					60					
Gln	Pro	Ala	Val	Lys	Lys	Thr	Ala	Lys	Ser	Gln	Asp	Pro	Ala	Met	Arg	
65				70					75					80		
Asn	Leu	Gln	Glu	Gln	Asp	Ala	Val	Tyr	Ile	Ala	Lys	Gln	Lys	Gln	Ala	
			85					90						95		
Lys	Ala	Ser	Pro	Phe	Lys	Thr	Glu	Ile	Glu	Thr	Ala	Leu	Glu	Glu	Ser	
			100					105						110		
Gly	Ile	Ile	Gly	Asn	Ser	Ala	His	Thr	Val	Pro	Glu	Pro	Gln	Thr	Gly	
	115						120						125			
His	Ser	Ala	Pro	Lys	Pro	Ala	Asp	Ala	Pro	Ala	Lys	Pro	Val	Pro	Val	
	130					135					140					
Pro	Gln	Thr	Pro	Ala	Lys	Pro	Leu	Ile	Thr	Leu	Lys	Glu	Leu	Ser	Lys	
145					150					155					160	
Val	Glu	Leu	Pro	Trp	Phe	Asp	Val	Arg	Phe	Asp	Phe	Ile	Ser	Tyr	Ile	
			165					170						175		
Ala	Leu	Thr	Glu	Ala	Lys	Glu	Leu	His	Ala	Leu	Pro	Arg	Leu	Ser	Asn	
		180						185					190			
Arg	Cys	Arg	Tyr	Gln	Ile	Val	Gly	Cys	Thr	Met	Asp	Asp	His	Phe	Gln	
	195						200					205				
Ile	Ala	Glu	Pro	Ile	Pro	Gly	Ile	Arg	Tyr	Gln	Ala	Phe	Ile	Val	Gly	
	210					215					220					
Ile	Gln	Ala	Val	Ser	Arg	Asn	Gly	Leu	Ala	Ser	Gln	Glu	Glu	Leu	Ser	
225					230					235				240		
Ala	Phe	Asn	Arg	Gln	Val	Asp	Ala	Phe	Ala	His	Ser	Met	Gly	Gly	Gln	
			245					250						255		

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 Asp Ala Phe Cys Ala Arg Val Asp Gln Thr Ile Ala Ile His Leu Val  
 275 280 285  
 Ser Pro Thr Ser Ile Ser Gly Val Glu Leu Arg Ser Ala Val Thr Gly  
 290 295 300  
 Val Gly Phe Val Leu Glu Asp Asp Gly Ala Phe His Tyr Thr Asp Thr  
 305 310 315 320  
 Ser Gly Ser Thr Met Phe Ser Ile Cys Ser Leu Asn Asn Glu Pro Phe  
 325 330 335  
 Thr Asn Ala Leu Leu Asp Asn Gln Ser Tyr Lys Gly Phe Ser Met Leu  
 340 345 350  
 Leu Asp Ile Pro His Ser Pro Ala Gly Glu Lys Thr Phe Asp Asp Leu  
 355 360 365  
 Phe Met Asp Leu Ala Val Arg Leu Ser Gly Gln Leu Asn Leu Asn Leu  
 370 375 380  
 Val Asn Asp Lys Met Glu Glu Val Ser Thr Gln Trp Leu Lys Asp Val  
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 Glu Pro Gly Gly Lys Thr Ala Leu Arg Leu Phe Ser  
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<210> 529  
 <211> 1287  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 529  
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 ctgctcaaca gcaaaaccag ccatgtccgc gacggcaaac cgtcggcgcg gccagtcag 180  
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aaaaccgccc	tgcgcctgtt	ttcataa				1287

<210> 530  
 <211> 428  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 530

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			20					25					30		
Phe	Gly	His	Ser	Asp	Lys	Asp	Ala	Leu	Leu	Asn	Ser	Lys	Thr	Ser	His
		35					40					45			
Val	Arg	Asp	Gly	Lys	Pro	Ser	Gly	Gly	Pro	Val	Met	Met	Pro	Lys	Pro
	50					55					60				
Gln	Pro	Ala	Val	Lys	Lys	Pro	Ala	Lys	Pro	Gln	Asp	Ser	Ala	Met	Arg
65				70					75					80	
Asn	Leu	Gln	Glu	Gln	Asp	Ala	Val	Tyr	Ile	Ala	Lys	Gln	Lys	Gln	Ala
			85					90						95	
Lys	Ala	Ser	Pro	Phe	Lys	Thr	Glu	Ile	Glu	Thr	Ala	Leu	Glu	Glu	Ile
		100					105						110		
Gly	Ile	Ile	Gly	Asn	Ser	Ala	His	Thr	Val	Ser	Glu	Pro	Gln	Thr	Gly
	115					120						125			
His	Ser	Ala	Pro	Lys	Pro	Ala	Asp	Ala	Pro	Ala	Lys	Pro	Val	Pro	Val
	130					135					140				
Pro	Gln	Thr	Pro	Ala	Lys	Pro	Leu	Ile	Thr	Leu	Lys	Glu	Leu	Ser	Lys
145				150					155					160	
Val	Glu	Leu	Pro	Trp	Phe	Asp	Val	Arg	Phe	Asp	Phe	Ile	Ser	Tyr	Ile
			165					170					175		
Ala	Leu	Thr	Glu	Ala	Lys	Glu	Leu	His	Ala	Leu	Pro	Arg	Leu	Ser	Asn
		180					185					190			
Arg	Cys	Arg	Tyr	Gln	Ile	Val	Gly	Cys	Thr	Met	Asp	Asp	His	Phe	Gln
	195					200					205				
Ile	Ala	Glu	Pro	Ile	Pro	Gly	Ile	Arg	Tyr	Gln	Ala	Phe	Ile	Val	Gly
210					215					220					
Ile	Gln	Ala	Val	Ser	Arg	Asn	Gly	Leu	Ala	Ser	Gln	Glu	Glu	Leu	Ser
225				230				235						240	

Ala Phe Asn Arg Gln Ala Asp Ala Phe Ala Gln Ser Met Gly Gly Gln  
245 250 255

Thr Leu His Thr Asp Leu Ala Ala Phe Ile Glu Val Ala Ser Ala Leu  
260 265 270

Asp Ala Phe Cys Ala Arg Val Asp Gln Thr Ile Ala Ile His Leu Val  
275 280 285

Ser Pro Thr Ser Ile Ser Gly Val Glu Leu Arg Ser Ala Val Thr Gly  
290 295 300

Val Gly Phe Val Leu Glu Asp Asp Gly Ala Phe His Tyr Thr Asp Thr  
305 310 315 320

Ser Gly Ser Thr Met Phe Ser Ile Cys Ser Leu Asn Asn Glu Pro Phe  
325 330 335

Thr Asn Ala Leu Leu Asp Asn Gln Ser Tyr Lys Gly Phe Ser Met Leu  
340 345 350

Leu Asp Ile Pro His Ser Pro Ala Gly Glu Lys Thr Phe Asp Asp Leu  
355 360 365

Phe Met Asp Leu Ala Val Arg Leu Ser Gly Gln Leu Asn Leu Asn Leu  
370 375 380

Val Asn Asp Lys Met Glu Glu Val Ser Thr Gln Trp Leu Lys Asp Val  
385 390 395 400

Arg Thr Tyr Val Leu Ala Arg Gln Ser Glu Met Leu Lys Val Gly Ile  
405 410 415

Glu Pro Gly Gly Lys Thr Ala Leu Arg Leu Phe Ser  
420 425

<210> 531  
<211> 464  
<212> DNA  
<213> Neisseria meningitidis

<400> 531  
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aaagcaccac cggtagcatg aagctgctga tttcctccat cgccctgatt tcattggtag 120  
tcggcggcat cggcgtgatg aacatcatgc tgggtgccgt taccgagcgc accaaagaaa 180  
tcggcatacag gatggcaatc ggcgcgcggc gcggcaatat ttygcagcag tttttgattg 240  
aggcgggtgtt aatctgcgtc atcggcgggtt tggtcggcgt gggtttgtcc gccgcggtca 300  
gcctcgtgtt caatcatttt gtaaccgact tcccgatgga catttccgcc atgtccgtca 360  
tcggcgcgggt cgcctgttcg accggaatcg gcatcgcgtt cggctttatg cctgccaata 420  
aagcagccaa actcaatccg atagacgcat tggcacagga ttga 464

<210> 532  
<211> 154  
<212> PRT  
<213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (15)..(15)  
 <223> Xaa= any amino acid

<220>  
 <221> misc\_feature  
 <222> (75)..(75)  
 <223> Xaa= any amino acid

<400> 532  
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 Ser Ile Ala Leu Ile Ser Leu Val Val Gly Gly Ile Gly Val Met Asn  
 35 40 45  
 Ile Met Leu Val Ser Val Thr Glu Arg Thr Lys Glu Ile Gly Ile Arg  
 50 55 60  
 Met Ala Ile Gly Ala Arg Arg Gly Asn Ile Xaa Gln Gln Phe Leu Ile  
 65 70 75 80  
 Glu Ala Val Leu Ile Cys Val Ile Gly Gly Leu Val Gly Val Gly Leu  
 85 90 95  
 Ser Ala Ala Val Ser Leu Val Phe Asn His Phe Val Thr Asp Phe Pro  
 100 105 110  
 Met Asp Ile Ser Ala Met Ser Val Ile Gly Ala Val Ala Cys Ser Thr  
 115 120 125  
 Gly Ile Gly Ile Ala Phe Gly Phe Met Pro Ala Asn Lys Ala Ala Lys  
 130 135 140  
 Leu Asn Pro Ile Asp Ala Leu Ala Gln Asp  
 145 150

<210> 533  
 <211> 1167  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 533  
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 atcatcggta tcgcgtcggg ggtttccgctc gtcgcattgg gcaatgggtc gcagaaaaaa 120  
 atccttgaag acatcagttc gatagggacg aacaccatca gcatcttccc ggggcgcggc 180  
 ttcggcgaca ggcgcagcgg caggattaaa accctgacca tagacgacgc aaaaatcatc 240  
 gccaaacaaa gctacgttgc ttccgccacg cccatgactt cgagcggcgg cagcgtgact 300  
 taccgcaaca ccgacctgac cgcctcgctt tacggcgtgg gcgaacaata tttcgacgtg 360  
 cgcggtactga agctggaaac ggggcggcgtg tttgacgaaa acgatgtgaa agaagacgcg 420  
 caggctcgtc tcatcgacca aaatgtcaaa gacaaactct ttgcggactc ggatccggtg 480  
 ggtaaaacca ttttgttcag gaaacgcccc ttgaccgtca tcggcgtgat gaaaaaagac 540



gaaaacgctt	tccgcaattc	cgacgtgctg	atgctttggt	cgccctatac	gacggtgatg	600
caccaaataca	caggcgagag	ccacaccaac	tccatcaccc	tcaaaatcaa	agacaatgcc	660
aatacccagg	ttgccgaaaa	agggtgacc	gatctgtctca	aagcgcgga	cggcacggaa	720
gatttcttca	tgaacaacag	cgacagcatc	aggcagatag	tgcgaaagcac	caccgggtacg	780
atgaagctgc	tgatttcttc	catcgccctg	atttcattgg	tagtcggcgg	catcggcgtg	840
atgaacatca	tgctgggtgc	cgttaccgag	cgcaccaaag	aaatcggcat	acggatggca	900
atcggcgcgc	ggcgcgga	tattttgcag	cagtttttga	ttgaggcggg	gttaatctgc	960
gtcatcggcg	gtttgggtcg	cgtgggtttg	tccgcgcgcg	tcagcctcgt	gttcaatcat	1020
tttgaaccg	acttcccgat	ggacatttcc	gccatgtccg	tcacggcgcg	ggtcgcctgt	1080
tcgaccggaa	tcggcatcgc	gttcggcttt	atgcctgcca	ataaagcagc	caaactcaat	1140
ccgatagacg	cattggcaca	ggattga				1167

<210> 534  
 <211> 388  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 534  
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 Met Leu Gly Ile Ile Ile Gly Ile Ala Ser Val Val Ser Val Val Ala  
 20 25 30  
 Leu Gly Asn Gly Ser Gln Lys Lys Ile Leu Glu Asp Ile Ser Ser Ile  
 35 40 45  
 Gly Thr Asn Thr Ile Ser Ile Phe Pro Gly Arg Gly Phe Gly Asp Arg  
 50 55 60  
 Arg Ser Gly Arg Ile Lys Thr Leu Thr Ile Asp Asp Ala Lys Ile Ile  
 65 70 75 80  
 Ala Lys Gln Ser Tyr Val Ala Ser Ala Thr Pro Met Thr Ser Ser Gly  
 85 90 95  
 Gly Thr Leu Thr Tyr Arg Asn Thr Asp Leu Thr Ala Ser Leu Tyr Gly  
 100 105 110  
 Val Gly Glu Gln Tyr Phe Asp Val Arg Gly Leu Lys Leu Glu Thr Gly  
 115 120 125  
 Arg Leu Phe Asp Glu Asn Asp Val Lys Glu Asp Ala Gln Val Val Val  
 130 135 140  
 Ile Asp Gln Asn Val Lys Asp Lys Leu Phe Ala Asp Ser Asp Pro Leu  
 145 150 155 160  
 Gly Lys Thr Ile Leu Phe Arg Lys Arg Pro Leu Thr Val Ile Gly Val  
 165 170 175  
 Met Lys Lys Asp Glu Asn Ala Phe Gly Asn Ser Asp Val Leu Met Leu  
 180 185 190  
 Trp Ser Pro Tyr Thr Thr Val Met His Gln Ile Thr Gly Glu Ser His  
 195 200 205

Thr Asn Ser Ile Thr Val Lys Ile Lys Asp Asn Ala Asn Thr Gln Val  
 210 215 220  
 Ala Glu Lys Gly Leu Thr Asp Leu Leu Lys Ala Arg His Gly Thr Glu  
 225 230 235 240  
 Asp Phe Phe Met Asn Asn Ser Asp Ser Ile Arg Gln Ile Val Glu Ser  
 245 250 255  
 Thr Thr Gly Thr Met Lys Leu Leu Ile Ser Ser Ile Ala Leu Ile Ser  
 260 265 270  
 Leu Val Val Gly Gly Ile Gly Val Met Asn Ile Met Leu Val Ser Val  
 275 280 285  
 Thr Glu Arg Thr Lys Glu Ile Gly Ile Arg Met Ala Ile Gly Ala Arg  
 290 295 300  
 Arg Gly Asn Ile Leu Gln Gln Phe Leu Ile Glu Ala Val Leu Ile Cys  
 305 310 315 320  
 Val Ile Gly Gly Leu Val Gly Val Gly Leu Ser Ala Ala Val Ser Leu  
 325 330 335  
 Val Phe Asn His Phe Val Thr Asp Phe Pro Met Asp Ile Ser Ala Met  
 340 345 350  
 Ser Val Ile Gly Ala Val Ala Cys Ser Thr Gly Ile Gly Ile Ala Phe  
 355 360 365  
 Gly Phe Met Pro Ala Asn Lys Ala Ala Lys Leu Asn Pro Ile Asp Ala  
 370 375 380  
 Leu Ala Gln Asp  
 385

<210> 535  
 <211> 1167  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 535  
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 atcatcggtg tgcgttcggt tgtctccgctc gtcgcattgg gcaacgggtc gcagaaaaaa 120  
 atccttgaag acatcagttc gatagggacg aacaccatca gcatcttccc agggcgcggc 180  
 ttcggcgaca ggcgagcggc caggattaaa accctgacca tagacgacgc aaaaatcatc 240  
 gccaaacaaa gctacgttgc ttccgccacg cccatgactt cgagcggcgg cagcgtgact 300  
 taccgcaata ccgacctgac cgcttctttg tacgggtgtgg gcgaacaata ttctgacgtg 360  
 cgcgggctga agctggaaac ggggcggctg tttgacgaaa acgatgtgaa agaagacgcg 420  
 caggtcgtcg tcatcgacca aaatgtcaaa gacaaactct ttgcggactc ggatccggtg 480  
 ggtaaaacca ttttgttcag gaaacgcccc ttgaccgtca tcggcgtgat gaaaaaagac 540  
 gaaaacgctt tcggcaattc cgacgtgctg atgctttggt cgccctatac gacggtgatg 600  
 caccaaatca caggcgagag ccacaccaac tccatcacgg tcaaaatcaa agacaatgcc 660  
 aatacccagg ttgccgaaaa agggctgacc gatctgctca aagcgcggca cggcacggaa 720  
 gatttcttca tgaacaacag cgacagcatc aggcagatag tcgaaagcac caccggtacg 780  
 atgaagctgc tgatttcctc catcgccctg atttcattgg tagtcggcgg catcggcgtg 840